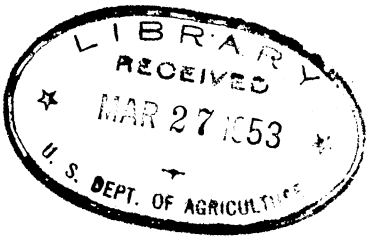
Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

U. S. DEPARTMENT OF AGRICULTURE.

SECOND ANNUAL REPORT

OF THE



BUREAU OF ANIMAL INDUSTRY,

FOR

THE YEAR 1885.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1886.

12508 A I

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That there be printed 50,000 copies of the Second Annual Report of the Bureau of Animal Industry for the year 1885, of which 10,000 copies shall be for the use of members of the Senate, 35,000 for the use of members of the House of Representatives, and 5,000 for the use of the Commissioner of Agriculture; the illustrations to be executed under the supervision of the Public Printer, in accordance with directions of the Joint Committee on Printing, the work to be subject to the approval of the Commissioner of Agriculture.

Approved March 3, 1885.

741174

TABLE OF CONTENTS.

	Page.
REPORT OF D. E. SALMON, D. V. M., Chief of Bureau of Animal Industry:	
On contagious pleuro-pneumonia	9
On swine plague	184
On Southern cattle fever	247
On gapes in fowls	274
On verminous bronchitis (lung worms)	278
On neat-cattle quarantine	290
REPORT OF H. M. TAYLOR, Agent Bureau of Animal Industry:	
On importance of the range industry	293
REPORT OF S. H. STANDART, Agent Bureau of Animal Industry:	
On condition of the live-stock industry of Colorado and the Territories of the Northwest	326
REPORT OF E. W. PERRY, Inspector Bureau of Animal Industry:	
On the cattle trade and dairy interests of Alabama, Georgia, Illinois, Indiana, and Ohio	335
REPORT OF J. N. BRADLEY, Inspector Bureau of Animal Industry:	
On the swine and fowl industry of Missouri, and the annual loss by disease.	418
On the cattle interests west of the Mississippi	424
REPORT OF LAWRENCE WILSON, Inspector Bureau of Animal Industry:	
On the condition of the live-stock industry west of the Mississippi	429
Investigation of swine plague in Nebraska	434
The extension of contagious animal diseases and methods for their limitation. By Ezra M. Hunt, M. D., Sc. D	446
Neat-cattle quarantine regulations	451
Items of interest from correspondents	461
Laws of the States and Territories for the control of contagious animal diseases.	471
APPENDIX.—Investigation of contagious pleuro-pneumonia. Details of inspections	553

LIST OF ILLUSTRATIONS.

Page.

INVESTIGATION OF SWINE PLAGUE:

Plate I.—Ulcerated cæcum in swine plague 246
Plate II.—Bacillus of *rouget*, and Pasteur's vaccine for the same 246
Plate III.—Bacterium of swine plague in culture 246
Plate IV.—*Bacillus luteus* (*suis*): Culture in gelatine plates 246
Plate V.—*Bacillus luteus* (*suis*): Culture in liquids 246
Plate VI.—*Bacillus luteus* (*suis*): Culture in gelatine tubes, &c 246
Plate VII.—*Bacillus luteus* (*suis*): Culture on potato 246

INVESTIGATION OF VERMINOUS BRONCHITIS:

Plate VIII.—Lateral aspect of lung of affected calf 288
Plate IX.—Section of the same; bronchus crowded with worms 288
Plate X.—Anatomy of *Strongylus micrurus* 288
Plate XI.—Showing various lung worms 288

LETTER OF TRANSMITTAL.

SIR: I have the honor to submit herewith the Second Annual Report of the Bureau of Animal Industry, containing an account of the work during the past year for the suppression of the disease known as contagious pleuro-pneumonia of cattle, and also of the investigations of this and other diseases of our domestic animals, and in regard to the present condition of the cattle industry.

The outbreak of pleuro-pneumonia in the Western States, which originated in Ohio in 1883, and which at one time threatened irreparable injury to the cattle industry of the nation, has now been practically suppressed. The disease was carried from Ohio to Illinois, and from Illinois to Missouri and Kentucky, great damage being done by the interruptions of trade and commerce which resulted. The loss of cattle was less than would be expected from an outbreak of such proportions, and this was due, not to any diminished virulence of the disease, but to its early discovery and the measures adopted for its control and eradication. The part taken by this Bureau in the discovery and extirpation of the outbreak will be understood from a perusal of the present and the preceding report. Since the report was written information has been received that the bill which has been pending in the Kentucky legislature for the extirpation of pleuro-pneumonia in that State has become a law, and it is now only a question of a short time when all danger there will be removed. This makes a period of about twenty months from the discovery of the plague in the West to its complete suppression, during which time the loss from restrictions and interruptions to trade have amounted to millions of dollars—probably to four or five times as much as would have been sufficient to extirpate this exotic disease from the whole country. With proper laws the malady could have been just as effectually extirpated within a few weeks and at an expense not exceeding $100,000.

For the fortunate termination of this outbreak the country is indebted to the prompt and efficient co-operation of the authorities of the infected States, and particularly to Drs. M. R. Trumbower, C. B. Michener, and W. H. Wray, inspectors of this Bureau, whose professional knowledge

and good judgment were invaluable in the diagnosis of the plague, and in proposing and carrying out measures for its suppression.

The inspection of cattle in the pleuro-pneumonia districts of the East has been completed so far as is possible under the present law. An appendix has been added to this report which gives details of these inspections, the indications being that while there is probably somewhat less of the disease in Pennsylvania and New Jersey than existed a few years ago, there is little if any change in New York and Maryland. All of these States have unfortunately adopted the practice of inoculation, under the mistaken idea that it will eradicate the disease and save expense. This operation is not followed by the supervision and precautions which the experience of Europe has shown to be necessary to prevent the spread of the disease where it is employed. As a consequence, dangerous animals from inoculated herds enter markets and are sold where they disseminate the plague. The operation, instead of being a protection to the community, has, therefore, become a great danger, which nothing but a strong national law will be likely to remove. Owing to the importance of this subject, considerable space has been devoted to a consideration of the results of inoculation as practiced abroad, and it is believed that a careful perusal of the facts there given will convince any unbiased person that this operation should be prohibited in the United States.

The investigations of the disease known as swine plague have proceeded almost without interruption during the year and have yielded very important results. In the study of a virulent outbreak which occurred in this vicinity a microbe was discovered which had not been before described, and which was certainly the cause of this outbreak. It raises the question once more as to whether essentially different contagious diseases have been heretofore grouped together as swine plague. To settle this we have already begun an investigation of outbreaks in different parts of the country, and with the present perfected methods of research, and guided by the knowledge accumulated by the investigations of the past, we will soon be able to determine this important point beyond controversy. The reason for our failures in the past to completely elucidate the cause and nature of the maladies of swine which we have from time to time investigated, now seems very plain. Indeed this has been one of the most difficult of all diseases to investigate, because it is almost invariably complicated, except in its first stages, with septic disorders. The virus first attacks the intestine, causing enormous ulcers through which septic microbes gain admission to the tissues, and the disease is then no longer simple swine plague, but it is a complication of this with one or more additional disorders. The germs found were, consequently, not those of swine plague alone, but a variety were present, those of septicæmia being often more numerous and more prominent than those of swine plague. To discriminate between these,

and to learn the exact relation of each to the malady in question, has been a long and exceedingly difficult task. We believe this is at last accomplished; but so many new facts have been brought to light, that it is now necessary to extend our field of investigations and learn if our conclusions apply to all outbreaks in the various parts of the country. This is necessary before any measures of prevention can be adopted.

An investigation has been made of the vaccine which is distributed by M. Pasteur for the prevention of the disease of swine known in France as *rouget*. Many have advocated the use of this vaccine for the prevention of swine plague in this country, and some have actually introduced it. Our experiments show that *rouget* and swine plague are different diseases, that Pasteur's vaccine has no influence in protecting hogs from swine plague, and that by the use of his vaccine in America we will simply introduce one more plague to prey upon our swine without in any way securing a compensating advantage. Special attention is directed to this in the hopes that those who are so determined to practice Pasteur's vaccination in our States will delay their action and not rush blindly into a measure that may bring untold loss to the swine breeders of this country.

Experiments are now in progress to determine the most certain and practical means of preventing this destructive malady of swine, and facts of very great importance have been discovered, which it it is hoped will enable us to develop a method that will prove, at the same time, safe and reliable. I have been ably assisted in these investigations by Dr. Theobald Smith, whose untiring services have been indispensable and invaluable; also, by Dr. F. L. Kilborne, who has had charge of the experiment station.

The investigations of Southern cattle fever have been limited to the collection of data bearing upon the extent of the district permanently infected with this disease. A map is inserted, which shows the approximate location of the border line of this district from the Mississippi to the Rio Grande. It must be considered more or less provisional in character, and subject to correction as more complete information can be collected.

Investigations have also been made in regard to gapes in fowls and verminous bronchitis in calves, which have yielded interesting and valuable results. The statistics of cattle imported through the neat cattle quarantine stations are given in detail, and the orders and regulations in regard to quarantining such cattle are now for the first time collected and published in a connected form.

Reports are also appended of Messrs. H. M. Taylor and S. H. Standart, agents of the Bureau, and of Messrs. E. W. Perry, J. N. Bradley, and Lawrence Wilson, inspectors, on various subjects connected with the condition of the animal industry in different parts of the country. An able paper by Dr. Ezra M. Hunt on the extension of contagious an-

imal diseases and methods for their limitation will be read at this time with much interest. An investigation of the extent of swine plague and the losses from it in Nebraska, and a collection of the laws of the various States and Territories for the control of contagious animal diseases, with items of interest from correspondents, complete the contents of the volume.

Respectfully submitted, February 12, 1886.

D. E. SALMON,
Chief of the Bureau of Animal Industry.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture.

SECOND ANNUAL REPORT OF THE BUREAU OF ANIMAL INDUSTRY.

REPORT OF THE CHIEF OF THE BUREAU.

SIR: At the time my last annual report was submitted there was in progress in the Western States the first outbreak of contagious pleuro-pneumonia which had ever invaded that section of the country. Although the disease seemed to be under control in Ohio and Illinois, there were many reasons to fear that some infected herds might have escaped discovery, and there were grave apprehensions that the contagion would be allowed to spread from the affected herd in Kentucky. The owners of this herd assumed an unfriendly attitude towards the officers of the Bureau from the time the first investigations were made, and were so evidently determined to save themselves from loss without regard to the safety of their neighbors or that of the country at large as to make it reasonably certain that the trouble would be disseminated by their cattle in spite of all that could be done under either the national or State laws to prevent it. They employed able counsel to protect their interests, and demanded complete compensation for all loss to which they might be subjected in efforts to isolate the contagion, even asking that the cost of feeding the herd while in quarantine should be assumed by the Bureau.

The inspections in the Eastern States have demonstrated the prevalence of the same disease in the vicinity of New York City and Brooklyn, and in parts of New Jersey, Pennsylvania, Maryland, the District of Columbia, and Virginia. The experiments and other investigations were also successful in demonstrating beyond question the contagiousness of this affection and its identity in all of its characters with the contagious pleuro-pneumonia of Europe.

INVESTIGATIONS OF PLEURO-PNEUMONIA.

In this report the history of these outbreaks and the account of our investigations will be resumed at the point where it was neeessary to close them last year.

PLEURO-PNEUMONIA IN KENTUCKY.

As there was no law among the statutes of Kentucky which had been framed with such an emergency in view as occurred by the introduction of lung plague among the cattle of that State, many of the citizens advocated an extra session of the legislature in order that such laws might be enacted. They argued that as the next regular session would not begin until after a period of more than a year had elapsed, the spread of the malady might before that time work irreparable injury to the cattle interests of the State.

On the other hand, Governor Knott contended that the common law and the general provisions of the statutes in regard to distempered cattle were amply sufficient to accomplish all that could possibly be done by legislation. The following letter which I find in the *Home and Farm*, a paper published at Louisville, Ky., in its issue of October 15, 1885, gives the governor's views so clearly that it is inserted as a document of great interest at this time:

FRANKFORT, KY., *September* 24, 1885.

To the honorable judge of the county court and justices of the court of claims of Fayette County:

GENTLEMEN: I am this moment in receipt of a copy of your resolution of the 20th instant, calling my attention to the fact that the disease known as pleuro-pneumonia had made its appearance in an expensive herd of cattle near Cynthiana, in Harrison County, and suggesting in my "experience and intelligence some means might be found to avert what threatens to be a most serious calamity," in view of the highly contagious character of that malady.

Tendering you my sincerest thanks for such a distinguished indication of your confidence, I have the honor to say that the subject had already excited my liveliest interest, and I had, on more than one occasion, expressed to others my willingness to do anything in my power that might be necessary to prevent the spread of that disastrous plague in our State. It is a mistake, however, to suppose "that there is no law in existence to meet the gravity of the occasion"; on the contrary, it strikes me that the law is amply adequate to the emergency.

Should the owner of a herd of cattle known to be infected with pleuro-pneumonia, or any other contagious distemper, keep them in such a situation as would be likely to favor the communication of the contagion to others, he would be liable to indictment under the common law for maintaining a nuisance, and upon conviction, to punishment by fine and imprisonment, in the discretion of the jury, and in addition to that judgment the court would have power, if the offense were laid with a *continuando*, to order that the nuisance abate, and the abatement might be enforced, if necessary, even to the destruction of the property from which the nuisance springs. The court would, in such cases, have authority to order the sequestration of the infected herd until all liability of communicating the contagion had ceased, or its destruction, as the circumstances might indicate, to be more advisable.

Even private citizens may, at their own expense, abate a public nuisance, though they would be compelled to answer in damages in case they should resort to violence beyond what is actually needed, or the fact should turn out to be insufficient to authorize such peremptory intervention. In view of such responsibility, of course no private citizen of ordinary prudence would think of resorting to such a remedy, except in the extremest emergency, especially as the courts have power to give complete redress.

In addition to the remedy by penal prosecution, which may result, as I have already said, not only in the fine and imprisonment of the delinquent owner of such infected herd, but the sequestration or destruction of the herd itself, he would be answerable in damages to any one directly injured by the spread of the contagion, after the facts of its existence had come to his knowledge.

Besides, you will observe by reference to sections 4 and 6, chapter 9, General Statutes, that if a justice of the peace be informed by affidavit that the owner of any distempered cattle has permitted them to run at large outside his inclosure, or has driven the same into or through any part of this Commonwealth, except from one portion of his own inclosure to another, it is the duty of such justice to issue his order, in the name of the Commonwealth, commanding the owner to impound them; and if he fail or refuse to do so, or permit them to escape, the magistrate has power to order the cattle to be killed and buried at the expense of the owner.

It seems to me that if these remedies are insufficient to eradicate or to prevent the dissemination of pleuro-pneumonia it would be difficult, if not impossible, for legislative wisdom or ingenuity to devise any that would accomplish these ends.

I will add that the owners of the herd supposed to be infected are fully aware of their liability under the circumstances, and have assured me that they will use every precaution to prevent the spread of the disease, and every effort in their power to extirpate it, if it really exists among their cattle. What precautionary methods should be taken by other cattle dealers and breeders will, of course, be dictated by their own prudence and intelligence. The only suggestion that I can make is that the law should be rigidly enforced whenever the circumstances require it. That, if anything, will insure the extirpation of the disease, as it must result in the destruction of the diseased animals themselves, if necessary.

With sentiments of great respect, I am, very truly, your obedient servant,

J. PROCTOR KNOTT.

It will be seen that in this communication Governor Knott points out a course of procedure which, if enforced, would seem to inevitably lead to the annihilation of all dangerous cattle in the State. As a matter of fact it was not enforced. The diseased cattle were handled so recklessly that many others were infected; the plague notoriously existed in the herd of Messrs. Frisbie & Lake for month after month, endangering the stock of their neighbors, and causing burdensome restrictions to be placed upon the cattle trade of the whole State; but no legal measures were adopted in accordance with the plan so forcibly outlined by the governor. Whether this action was deferred because of the intimation in the above letter that the parties enforcing this law "would be compelled to answer in damages in case they should resort to violence beyond what is actually needed, or the fact should turn out to be insufficient to authorize such peremptory intervention," or whether it was because of a general feeling that the measures indicated were not as practical and efficient as the governor thought, is not clear, but it is believed that both of these reasons had considerable influence.

The Department received many letters from citizens of Kentucky, stating that the infected cattle were not isolated sufficiently to prevent the spread of the contagion, that some cows believed to be affected were allowed to mingle with other cows belonging to citizens of Cynthiana, and asking that an inspector be sent to watch the course of events, and to do whatever was possible towards checking the disease until more efficient and practical legislation could be enacted either by Congress or the State legislature. In view of the great amount of property threatened, and the possibility of violations or evasions of the act of Congress prohibiting the movement of affected animals from one State or Territory into another, it was deemed advisable to accede to these requests Accordingly, Dr. H. A. Woodroffe, a gentleman who was well recommended for professional ability, and who had acquitted himself with credit in the English veterinary service, was appointed December 3, 1884, and instructed to proceed at once to Kentucky. He was to consult with the leading stock-owners, to keep a supervision of the cattle about Cynthiana, and to inform the Department of any violation of the law, or of any movement of cattle that there was reason to believe had been exposed to the contagion.

On Saturday, December 27, 1884, the following letter was received at the Department from Dr. Woodroffe, inclosing copy of a certificate which he had furnished Messrs. Frisbie & Lake to enable them to make a large shipment of animals from their herd to the State of Texas:

LEXINGTON, KY., *December* 25, 1884.

SIR: I visited Cynthiana, Ky., on the 23d instant, for the purpose of inspecting 126 head of unregistered Jersey cows and heifers and 20 registered bulls, which Messrs. Frisbie & Lake are about to ship to Texas. After a careful inspection I found them all perfectly healthy and free from any appearance of pleuro-pneumonia or other contagious diseases, and being satisfied that due precautions have been taken to prevent their exposure to the infected cattle, I gave them a certificate of health, copy of which is also annexed.

I also made an inspection of their infected herd, which contains about 75 head of registered Jerseys in all. I noticed some of them very unthrifty-looking and coughing, and on closer examination found several of their lungs showing signs of the disease in its chronic form. Messrs. Frisbie & Lake are now making arrangements to put all their suspicious cases in a spare barn by themselves, about 200 yards from where the remainder of the herd are to be housed.

The disease appears to be pretty well under control in this State and in Ohio, as, with the exception of the Dresden cattle, no fresh outbreaks have come under my notice.

There have been some fatal cases of anthrax amongst cattle in the neighborhood of Lexington. And I am also informed that hog cholera is very prevalent and causing great mortality amongst the swine in this State and Ohio.

Respectfully yours,

H. A. WOODROFFE, M. R. C. V. S.,
Veterinary Inspector, Bureau of Animal Industry.

Dr. D. E. SALMON,
Chief of the Bureau of Animal Industry.

I hereby certify that I this day inspected the undermentioned Jersey females and registered bulls belonging to Messrs. Frisbie & Lake, Cynthiana, Ky., viz: 11 cows and heifers upon the farm of John Moore, 6 miles from Cynthiana; 58 heifers and 3 bulls upon the farm occupied by George Mitchell, 6 miles from Cynthiana; 57 cows and heifers and 17 bulls on farm occupied by A. T. Fitzwater, as tenant of J. K. Lake, 3 miles from Cynthiana.

After a careful examination I find said cattle in perfect health, and free from any appearance of pleuro-pneumonia or other contagious diseases.

H. A. WOODROFFE, M. R. C. V. S.,
Veterinary Inspector, Bureau of Animal Industry.

CYNTHIANA, KY., *December* 23, 1884.

The following telegrams will show the action taken by the Department on the receipt of Dr. Woodroffe's letter:

UNITED STATES DEPARTMENT OF AGRICULTURE,
Washington, D. C., January 2, 1885.

FRISBIE & LAKE,
Cynthiana, Ky.:

You are hereby notified, in accordance with the law relating to contagious animal diseases, not to ship cattle to Texas or elsewhere without permit from this Department.

GEO. B. LORING,
Commissioner of Agriculture.

UNITED STATES DEPARTMENT OF AGRICULTURE,
Washington, D. C., January 2, 1885.

Dr. H. A. WOODROFFE,
Lexington, Ky.:

Go to Cynthiana immediately and notify me by telegraph if Frisbie & Lake's cattle have been shipped.

GEO. B. LORING,
Commissioner of Agriculture.

UNITED STATES DEPARTMENT OF AGRICULTURE,
Washington, D. C., January 2, 1885.

AGENT KENTUCKY CENTRAL RAILROAD,
Cynthiana, Ky.:

Under the provisions of sections 6 and 7 of the act of Congress approved May 29, 1884, I am obliged to notify you that the herd of cattle belonging to Messrs. Frisbie & Lake, of Cynthiana, Ky., are affected with contagious pleuro-pneumonia in the judgment of the veterinary Chief of the Bureau of Animal Industry of this Department, and that their shipment over the Kentucky Central Railroad would be a violation of the act referred to, and would render your company liable to the penalty therein specified.

GEO. B. LORING,
Commissioner of Agriculture.

This action was taken because—

(1) In the conference of Kentucky cattle-breeders held in Lexington, Ky., September 19, 1884, Messrs. Frisbie & Lake, through their counsel, were reported to have made this statement:

On the 15th instant they received a letter from E. A. Carman, Acting Commissioner of Agriculture, and afterwards from Governor Knott, to make no sales. Wednesday they noticed several cattle sick, and Dr. Hagyard was sent for and slaughtered a cow and discovered the presence of pleuro-pneumonia. Since then several others have taken sick, and have been in contact with the herd, which numbers upwards of 200 animals.—(*Cincinnati Commercial Gazette, September* 21, 1884.)

(2) In a letter to the Department, dated September 18, 1884, Messrs. Frisbie & Lake wrote:

Our herd consists of about 250 head, and all of them had an opportunity to take the disease if contagious.—(First Annual Report of Bureau of Animal Industry, 1884, p. 32.)

(3) On September 24, 1884, the chief of this Bureau visited the farm of Mr. Lake, of which A. T. Fitzwater was tenant, and found there running with the remainder of the cattle on the farm two animals which, on examination of the lungs, presented very plain symptoms of pleuro-pneumonia, and others which were not examined, but which did not appear well, and which were believed at the time to be suffering from the same disease. Mr. Frisbie was present at this examination, and expressed the opinion that a considerable number were more or less affected. Indeed, at the time of this visit no one questioned the fact that the unregistered as well as the registered cattle had been exposed and were sickening, and when the stockmen of the State attempted to raise money to purchase and slaughter this herd they appraised the unregistered as well as the registered, and they did this because of the statement of Messrs. Frisbie & Lake that all were infected.

These facts were deemed sufficient to justify the holding of the herd in Kentucky until a longer period had elapsed, even though the inspectors had been unable to find any traces of disease by a careful and thorough examination. The examination actually made, it was learned afterwards, was a very superficial one, less than half of the animals in the herd being caught for this purpose.

The following telegrams were received from Dr. Woodroffe and Messrs. Frisbie & Lake, January 3, 1885:

CYNTHIANA, KY., *January* 3, 1885.

Hon. GEO. B. LORING,
Commissioner of Agriculture, Washington, D. C.:

Cattle referred to in my last dispatch belonging to Frisbie & Lake were unregistered Jerseys, and had not been exposed to infected herd for fully six months. They were inspected by Dr. Hagyard and myself and found free from any appearance of disease.

H. A. WOODROFFE.

CYNTHIANA, KY., *January* 3, 1885.

Hon. GEO. B. LORING,
Commissioner of Agriculture, Washington, D. C.:

Frisbie & Lake's cattle shipped to Austin, Tex., last Saturday.

H. A. WOODROFFE.

CYNTHIANA, Ky., *January* 3, 1885.

Hon. GEO. B. LORING,
Commissioner of Agriculture, Washington, D. C.:

Before receiving your dispatch we had made a shipment of cattle, but not from infected herd. The cattle shipped were thoroughly examined by Drs. Hagyard and Woodroffe, and were healthy and sound. They have never been diseased, and for six months have been miles away from diseased herd.

FRISBIE & LAKE.

The governor of Texas was immediately notified of the shipment of this herd in the following telegram:

UNITED STATES DEPARTMENT OF AGRICULTURE,
Washington, D. C., January 3, 1885.

Governor JOHN IRELAND,
Austin, Tex.:

Frisbie & Lake, of Cynthiana, Ky., shipped by railroad December 27, 1884, consigned to Austin, Tex., a number of unregistered Jerseys. They are from a herd of Jersey cattle pronounced by the Chief of Bureau of Animal Industry of this Department affected with contagious pleuro-pneumonia. All were exposed to disease, and

fearing it will develop in some of them after arrival, I recommend the quarantine and careful supervision of these animals for three months. When I learn to whom shipped I will inform you.

GEO. B. LORING,
Commissioner of Agriculture.

The following letter to Dr. Woodroffe needs no additional explanation:

UNITED STATES DEPARTMENT OF AGRICULTURE,
Washington, D. C., January 3, 1884.

SIR: Your letter in regard to the examination of Messrs. Frisbie & Lake's cattle, and your telegram of this date, are at hand. I am greatly surprised at your action in giving them a certificate of health, and in allowing these animals to be shipped without notifying me immediately by telegraph as soon as you learned of this intention on the part of the owners. You were given no authority from this Department to issue certificates of health to any one, and certainly none to allow the shipment of animals, the movement of which had been officially prohibited by the Commissioner of Agriculture, because they had been exposed to so dangerous a contagious disease as pleuropneumonia. Having personally explained to you my fears that cattle from this herd would be sent to other States, and the danger which would result from such shipment, and having stationed you in that vicinity with the single object of keeping me advised of the condition of affairs in order to prevent the removal of these animals, I am at a loss to understand how you could examine cattle from this herd, certify to their healthfulness, and consent to their shipment, without first consulting the Commissioner of Agriculture or the Chief of this Bureau. Not only did you do this, but you neglected to write to me in regard to it until the cattle were shipped, thus keeping me in ignorance of the whole transaction until the animals were on the road and it was too late to stop them.

I am not satisfied with your explanation that these animals had not been exposed for more than six months. You have been in Kentucky only for a few weeks, and but a small part of that time at Cynthiana, and you have no means of knowing when the cattle which you examined had been exposed. I saw the greater part of these animals myself within about three months of the time of shipment, and I know their situation and condition at that time too well to accept the statement now made by their owners.

You will please make a detailed report at once of the number of animals that were shipped, the names and numbers of any registered animals that were among them, the farms from which they were taken, and the number from each, and the name and address of the party who purchased them.

Very respectfully,

D. E. SALMON,
Chief of the Bureau.

Dr. H. A. WOODROFFE,
Inspector of the Bureau of Animal Industry.

Two telegrams were received from Dr. Woodroffe January 4, as follows:

CYNTHIANA, KY., *January* 4, 1885.

Hon. GEO. B. LORING,
Commissioner of Agriculture, Washington, D. C.:

Received information that F. B. Hamilton, president Jersey Breeders' Association, Jackson, Tenn., shipped on his own responsibility to that place, by way of Lexington, Louisville, and Milan on December 30, 24 registered cows and calves from the infected herd which he had purchased from Frisbie & Lake last spring.

H. A. WOODROFFE.

CYNTHIANA, KY., *January* 4, 1885.

Hon. GEO. B. LORING,
Commissioner of Agriculture, Washington, D. C.:

One hundred and twenty-five unregistered Jerseys shipped by Frisbie & Lake, December 25, over the Big Four, consigned to H. D. Frisbie, Austin, Tex. Cattle referred to in yesterday's dispatch.

H. A. WOODROFFE.

The receipt of information that animals undoubtedly affected had gone from the Frisbie & Lake herd to Tennessee led to the following action by the Department:

UNITED STATES DEPARTMENT OF AGRICULTURE,
Washington, D. C., January 5, 1885.

Governor WM. B. BATE,
Nashville, Tenn.:

Dr. F. B. Hamilton shipped by railroad December 31, 1884, from Cynthiana, Ky., to Jackson, 24 registered Jersey cows and calves from the herd of Frisbie & Lake, pronounced by the Chief of the Bureau of Animal Industry of this Department affected with contagious pleuro-pneumonia. All were exposed to disease, and fearing that they will disseminate it among the cattle of your State I recommend the quarantine and careful supervision of these animals for three months.

GEO. B. LORING,
Commissioner of Agriculture.

UNITED STATES DEPARTMENT OF AGRICULTURE,
Washington, D. C., January 5, 1885.

Dr. F. B. HAMILTON,
Jackson, Tenn.:

Under provisions of the act of Congress approved May 29, 1884, I am obliged to notify you that the herd of Messrs. Frisbie & Lake, of Cynthiana, Ky., is affected with pleuro-pneumonia, in the judgment of Chief of the Bureau of Animal Industry of this Department. Am informed you have recently shipped cattle from that herd to Jackson, Tenn. This shipment seems to be in violation of the act referred to, and, without explanation, exposes you to the penalty therein specified, as would also the shipment of the cattle to another point.

GEO. B. LORING,
Commissioner of Agriculture.

UNITED STATES DEPARTMENT OF AGRICULTURE,
Washington, D. C., January 5, 1885.

AGENT ILLINOIS CENTRAL RAILROAD COMPANY,
Jackson, Tenn.:

Under provisions of an act of Congress approved May 29, 1884, I am obliged to notify you that Dr. F. B. Hamilton, of Jackson, Tenn., has recently taken to Jackson 24 registered Jersey cows and calves from a herd at Cynthiana, Ky., which is affected with contagious pleuro-pneumonia, in the judgment of the Chief of the Bureau of Animal Industry of this Department. The shipment of these cattle or any that have been exposed to them over the Illinois Central Railroad would be a violation of the act referred to, and would render your company liable to the penalty therein specified.

GEO. B. LORING,
Commissioner of Agriculture.

UNITED STATES DEPARTMENT OF AGRICULTURE,
Washington, D. C., January 5, 1885.

AGENT MOBILE AND OHIO RAILROAD COMPANY,
Jackson, Tenn.:

Under provisions of an act of Congress, approved May 29, 1884, I am obliged to notify you that Dr. F. B. Hamilton, of Jackson, Tenn., has recently taken to Jackson 24 registered Jersey cows and calves from a herd at Cynthiana, Ky., which is affected with contagious pleuro-pneumonia in the judgment of the Chief of the Bureau of Animal Industry of this Department. The shipment of these cattle or any that have been exposed to them over the Mobile and Ohio Railroad would be a violation of the act referred to and would render your company liable to the penalty therein specified.

GEO. B. LORING,
Commissioner of Agriculture.

In order to learn the condition of the cattle shipped to Texas, and to furnish veterinary assistance if needed, an inspector of the Bureau was ordered there by telegram, as follows:

UNITED STATES DEPARTMENT OF AGRICULTURE,
Washington, D. C., January 5, 1885.

Dr. M. R. TRUMBOWER,
Springfield, Mo.:

Go to Austin, Tex., immediately, and examine and watch 125 head of cattle taken there by Frisbie from his infected herd. Consult with governor as to what measures can be taken to hold them in quarantine until safe. Answer.

GEO. B. LORING,
Commissioner of Agriculture.

The correspondence given below is added as a matter of interest in this connection:

HOUSE OF REPRESENTATIVES, UNITED STATES,
Washington, D. C., January 6, 1885.

SIR: I have just heard, incidentally, that a shipment of 120 head of cattle has been made by Messrs. Frisbie & Co., of Kentucky, to Texas, in which lot it is believed there are or have been symptoms of pleuro-pneumonia. Will you be kind enough to ascertain if there is any foundation for this report, and advise me at your earliest convenience.

Very respectfully,

THOMAS P. OCHILTREE.

Hon. GEO. B. LORING,
Commissioner of Agriculture.

The following answer was at once made to Mr. Ochiltree's letter:

UNITED STATES DEPARTMENT OF AGRICULTURE,
Washington, D. C., January 6, 1885.

SIR: In reply to your favor of this date, asking for information in regard to the shipment of cattle by Messrs. Frisbie & Lake, of Kentucky, to Texas, I give you below a statement of the facts so far as known at this time.

Messrs. Frisbie & Lake purchased two lots of cattle, one in June and the other in August, from W. C. Clarke, of Geneva, Ill. Clarke's herd at that time was affected with contagious pleuro-pneumonia, and the purchased animals conveyed the disease to the herd of Frisbie & Lake, at Cynthiana, Ky., which then consisted of about two hundred and fifty animals. These gentlemen were notified that any shipment of cattle from their herd would render them liable to the penalty specified in section 7 of the act for the establishment of a Bureau of Animal Industry; and more recently an inspector of the Bureau of Animal Industry was detailed to keep a supervision of these animals, and inform me of any intention on the part of the owners to move them.

The owners admit that their whole herd was exposed to the affected animals, and that a considerable number contracted the disease, but this herd was in different lots on widely-separated farms, and it is now asserted that those shipped to Texas had not been exposed for more than six months. The Chief of the Bureau of Animal Industry of this Department feels positive, however, that he saw some of these animals grazing with sick ones not more than three months before they were shipped.

Through the negligence of our inspector at Cynthiana, no information was received of the intention to ship any of these animals until December 27, the day on which they left. The owners were notified a second time by telegraph not to ship, and the railroad agent not to receive them, but I learned the next day that this notice had been received too late to arrest them.

I at once telegraphed to the governor of Texas of this shipment, stating that the animals were from a herd pronounced by the Chief of the Bureau of Animal Industry to be affected with contagious pleuro-pneumonia, and, fearing that the disease would develop in some of them after their arrival, I recommended the quarantine and careful supervision of them for three months.

I have also telegraphed our nearest inspector to proceed immediately to Austin and examine and watch this herd, and co-operate with the governor in a supervision and control of it until such time as it would be safe to allow such animals to mingle with other cattle.

At the time of shipment the 125 animals composing the lot were apparently in good health, and there may be no development of disease among them, but considering the vast cattle interests of Texas and of the Territories to which her animals are sent, I shall do all that is possible under the law to keep these animals from mingling with others until all danger is passed.

Very respectfully,

GEO. B. LORING.

Hon. THOMAS P. OCHILTREE,
United States House of Representatives.

On January 7, 1885, Dr. Woodroffe was notified that his services for the Department would terminate on January 15. The following is a copy of the notification:

UNITED STATES DEPARTMENT OF AGRICULTURE,
Washington, D. C., January 7, 1885.

SIR: You are hereby notified that after the 15th of January, 1885, your services will no longer be required by this Department.

Very respectfully,

GEO. B. LORING,
Commissioner of Agriculture.

Dr. H. A. WOODROFFE, *Cynthiana, Ky.*

On receipt of the notification, given above, Dr. Hamilton forwarded the following telegram and letters in explanation of his action:

JACKSON, TENN., *January* 6, 1885.

GEO. B. LORING,
Commissioner of Agriculture:

Letter of this date will explain. Have written Senator Jackson, who will give you all the facts.

F. B. HAMILTON.

JACKSON, TENN., *January* 6, 1885.

Hon GEO. B. LORING,
Commissioner of Agriculture:

Yours of January 5 is received. I am very much surprised at its contents. I will examine the matter, and in a few days will write you fully, giving all the facts of the whole transaction. Hoping this will be satisfactory for the present,

I am yours, respectfully,

F. B. HAMILTON,
President Jackson Jersey Breeders' Association.

JACKSON, TENN., *January* 7, 1885.

SIR: Your message received and answered yesterday. I now write you all the particulars.

Last June and July the Jackson Jersey Breeders' Association went to Cynthiana, Ky., and bought $7,500 worth of Jersey cattle and left them there until October, being afraid to move them to this climate until that time. In August we received notice that our cattle, in connection with those of Frisbie & Lake, had pleuro-pneumonia. We wired and wrote them (Frisbie & Lake) to do with our cattle as they did with their own. A veterinary surgeon under the employ of the United States Government was called in, and, Mr. Frisbie says, told him not to move the cattle in sixty or ninety days. That was in the month of August, 1884. He (Frisbie) told me that he had no further instructions in reference to shipping and moving the cattle. I reached Cynthiana on the last day of December, 1884, and went at once to Frisbie & Lake's office. They were surprised to see me, as they had telegraphed me that they did not have a clean bill of health. This telegram I did not receive, as I was on the way to Cynthiana. I asked them "if they were quarantined by the United States or State authorities." They said not. I then asked them if any of their stock or ours were sick. They said not, and that there had been no case of sickness since my visit there in October, 1884. They further said that no restrictions had been thrown around them, except those that were self-imposed, and if there was any law or any one that had any right to say that I should not move our cattle that they did not know them.

As the cattle were ours and had been well ever since September, being a physician myself and having paid some attention to veterinary practice, I concluded to bring our cattle home, knowing full well that cattle permitted to run day and night in an open wood pasture, without shelter or protection from the weather, would die, if they had any lung trouble. I felt perfectly safe in bringing them home, believing then, as I do now, that no man and no law on the statute books is against it. I am satisfied that the disease that these cattle suffered with is identical with the disease we have here every year, except that it is not so fatal there as here. Most of the autopsies had on the dead animals that die here show the lungs to be either hepatized or very much engorged, and, like the above disease, stops with the first frost. To insure that I am right I took a physician, Dr. Taylor, out to see our cattle to-day, and he and I examined every cow then that had been sick and those that had not, and every one of their lungs was examined by auscultation and percussion, and not one of them had the least trouble. And I think that another evidence that they had entirely recovered is in the fact that they were shipped in open stock cars with the thermometer at zero. I would respectfully refer you to Senator H. E. Jackson and Congressman John M. Taylor as to the character of the men who compose the Jersey Breeders' Association. They are W. P. Timberlake, L. Nance, E. C. Nance, and the writer. I would say in conclusion that they are on our farm with our other cattle, and are isolated and will be kept so, as we bought to raise from and not to sell. If I have not answered every question at issue, please let me hear from you.

I am, very respectfully, yours, &c.,

F. B. HAMILTON,
President Jersey Breeders' Association.

Hon. GEO. B. LORING,
Commissioner of Agriculture.

P. S.—If I had believed that these cattle were in any way affected with pleuro-pneumonia or any other disease, I would not have brought them here, as we have other

cattle interests here, that we, as individuals, have more interest in than our interest in the Jerseys brought here, to say nothing of the public interest. I am satisfied that you will find no disease in these cattle. I know there is none at this time. I inclose certificates from Dr. Taylor and Mr. F. B. Snipes.

F. B. HAMILTON,
President Jersey Breeders' Association.

[Certificates.]

JACKSON, TENN., *January* 7, 1885.

This certifies that I have this day examined the herd of Jersey cattle brought by Dr. F. B. Hamilton and others to this place from Cynthiana, Ky., with the following results: By inspection they present the appearance of being perfectly healthy, free from cough, no running at the nose, and respiration normal. By auscultation and percussion I found the lungs in healthy condition, entirely free from any condition that would indicate disease of a pulmonary nature or otherwise.

JNO. J. TAYLOR, M. D.,
Health officer, Madison County.

SIR: Being interested in the breeding of purely-bred cattle, and especially the Jersey, I rode out to-day to see the new importation of cattle belonging to the Jackson Jersey Breeders' Association, said to have been brought from the infected district at Cynthiana, Ky., and I am pleased to say to you, after a thorough examination as best I could make, that I see no indications of disease about them. They show rough, bad treatment, and are poor in consequence, but they seem to be perfectly healthy.

Respectfully, &c.,

F. B. SNIPES.

Hon. GEO. B. LORING,
Commissioner of Agriculture.

Below will be found a copy of Dr. Woodroffe's report on the cattle sent to Texas, with his explanation in regard to the certificate of health:

LEXINGTON, KY., *January* 9, 1885.

SIR: In reply to your communication of the 3d instant, which only came to hand yesterday, I beg to inform you that the total number of cattle shipped by Messrs. Frisbie & Lake to Austin, Tex., was 125 head, consisting of 112 cows and heifers (unregistered) and 13 bulls (registered).

The following are the names and numbers of the registered bulls, as far as I have been able to procure them, viz:

Name.	Number.	Name.	Number.
Jebbard	10,109	Silver Tennessee	
Junius Desha	11,858	Rompas Silver	11,949
Bosebud's Alphae		Captain Ken	9,207
Bashaw's Browny		Euralis Chief	9,612
Silkbeard's Prince		Robert Burns	11,333
Dido's Treasure		John Pansy	10,106

They were taken from three different farms, as follows: 11 cows and heifers (unregistered) from the farm of John Moore, 6 miles from Cynthiana; 51 heifers (unregistered) and 3 bulls (registered) from the farm occupied by George Mitchell, 6 miles from Cynthiana; 50 cows and heifers (unregistered) and 10 bulls (registered) from a farm occupied by A. T. Fitzwater as tenant of J. K. Lake, 3 miles from Cynthiana.

Messrs. Frisbie & Lake inform me that none of these cattle were sold previous to shipment. They were consigned to H. D. Frisbie, Austin, Tex., to be offered for sale there at the expiration of thirty days' quarantine.

Referring to your remarks regarding the action taken by me in respect to the above cattle, I think that when you are placed in possession of the facts and circumstances of the case, you will perceive that I acted with due precaution and the best intentions. At the time I granted the certificate I was not aware that you and the Commissioner of Agriculture had prohibited the movement of the unregistered cattle, they being located on different farms, fully 9 miles from where the infected herd was kept. Messrs. Frisbie & Lake having mentioned to me casually that they were going to ship some unregistered stock to Texas, I expressed a desire to see them, thinking that as I was on the spot it was my duty to inspect cattle in the neighborhood before being

shipped to another State. Messrs. Frisbie & Lake, acting under the advice of their attorney, Judge West, at first protested against my inspecting these cattle, stating that they had already been examined and passed by Dr. Hagyard, of Lexington, whom you had recommended to them, making it a Government transaction. Having satisfied me that the cattle referred to had not been exposed to the infected herd by producing the affidavits of a number of reputable residents in Harrison County, I consented to give them a certificate of health provided I did not detect any traces of pleuro-pneumonia or other contagious diseases among them. Mr. Frisbie then drove me out to the different farms where the cattle were, about 9 miles from the town, and after a careful examination I found them free from any appearances of disease, and gave the owners a certificate to that effect, a copy of which I forwarded you with my report the following day, thinking it would reach you before the cattle were shipped. It never entered my head that there would be any question raised in the matter, otherwise I would have telegraphed at once.

With regard to the 22 head of registered cattle which Dr. F. B. Hamilton, the president of the Jersey Breeders' Association, Jackson, Tenn., shipped to that place on the 31st December, on his own responsibility, I have not been able to learn any further particulars. I tried to ascertain their names and numbers from Mr. Lake, but he declined to give them, saying that it would not be fair to Dr. Hamilton, as he did not know what action he might want to take in the matter. I have, however, applied to J. J. Hand, secretary A. J. C. C., New York, for the transfers, and will forward to you as soon as I hear from him.

Respectfully yours,

H. A. WOODROFFE,
Veterinary Inspector, Bureau of Animal Industry.

Dr. D. E. SALMON,
Chief of Bureau of Animal Industry.

It will be noticed that Dr. Woodroffe states that the unregistered cattle were from farms located "fully 9 miles from where the infected herd was kept," and further on that Mr. Frisbie accompanied him "to the different farms where the cattle were, about 9 miles from the town." By reference to an earlier paragraph in the same letter it will be seen that one of these farms was located but 3 miles from town, and the other two but 6 miles. The latter statement is the correct one. It will also be observed that 60 of the animals shipped were from Mr. Lake's farm, of which A. T. Fitzwater was tenant. This farm was but 3 miles from town, and probably not more than 2 miles from Mr. Lake's home place, where a part of the sick cattle were kept. The attention of the reader is directed to these incorrect statements to prevent his being misled as to the actual condition of affairs.

There seems to be little reason to doubt that Dr. Woodroffe was deceived by Messrs. Frisbie & Lake as to the relation of Dr. Hagyard to the Department of Agriculture. He states that he was shown a telegram from the Chief of the Bureau of Animal Industry advising the employment of Dr. Hagyard, and supposed that, owing to his (Dr. Woodroffe's) absence in Ohio, Dr. Hagyard had been temporarily employed by the Department to make this examination. As a consequence his own inspection was less thorough than it would have been, and he gave a certificate of health which he probably would not have given had he understood that Dr. Hagyard was recommended to Messrs. Frisbie & Lake for an entirely different purpose.

As this telegram was afterwards used by Messrs. Frisbie & Lake in their advertisements and newspaper articles, and, by omitting, or in some cases changing, date, was made to produce the same impression upon the reader that it had produced upon the mind of Dr. Woodroffe, it is well to give an explanation of the circumstances under which it was sent.

When the Chief of this Bureau visited Cynthiana, in September, 1884, a number of sick animals were found among the herd of unregistered cattle, and Mr. Frisbie was then advised to have every animal in this herd

carefully examined and the healthy ones removed from contact with any that presented the least signs of disease. At that time negotiations were in progress with the stockmen of the State, who were trying to raise enough money to purchase and slaughter all the cattle belonging to Messrs. Frisbie & Lake, and the last-named gentlemen did not consider it to their interest to have such a separation made. It soon became evident, however, that a sufficient amount of money could not be raised to purchase the cattle, and then the owners seem to have concluded that their best plan was to separate the sick from the well ones, according to the advice mentioned above. For this purpose the following telegram was sent:

CYNTHIANA, KY., *September* 27, 1884.

DR. D. E. SALMON,
Chicago, Ill.:

We desire to isolate all the affected cattle in our four herds. When can you come and inspect them? Answer.

FRISBIE & LAKE.

There are two points in this telegram to which attention is particularly directed. In the first place the object of the inspection as stated in this telegram was to enable them to isolate the affected cattle. It was not to have cattle inspected for the purpose of shipping them to Texas, or to any other locality, and at that time I had never received any intimation that they expected or desired to make any shipments. In the second place, they admit in this telegram having at that time four infected herds. One of these I understand to be the herd of unregistered cattle on the farm of Mr. Lake, of which A. T. Fitzwater was tenant.

At the time this telegram was received it was impossible for the Chief of the Bureau to return and make the desired inspections, and all of the inspectors in the employ of the Bureau were engaged in important work from which they could not be spared. The following reply was, therefore, sent to Messrs. Frisbie & Lake's telegram:

UNITED STATES DEPARTMENT OF AGRICULTURE,
Washington, D. C., October 8, 1884.

FRISBIE & LAKE,
Cynthiana, Ky.:

Find I have no one that can be spared now to examine your herd. Advise employment of Dr. Hagyard.

D. E. SALMON,
Chief of Bureau of Animal Industry.

That is, Dr. Hagyard was recommended to Frisbie & Lake as the most available man for them to employ as a private practitioner, and for the purpose of securing their private interests. The difference in the dates of the two telegrams is due to the former being received at Chicago, and the answer having been delayed until my return to Washington. Dr. Hagyard did not represent this Department in any degree, nor did he have any authority to inspect any cattle in behalf of the Department, or to give certificates of health which would relieve the owners of any responsibility which they were under because of restrictions imposed in accordance with the act establishing the Bureau of Animal Industry.

The following letter and telegram explain the position assumed towards Dr. Trumbower by the governor of Texas and by Mr. Frisbie:

AUSTIN, TEX., *January* 11, 1885.

SIR: I arrived here yesterday and made inquiries quietly concerning prominent stockmen, but received very little information of Frisbie's cattle until I met Mr. B. B.

Groom, whose name I saw on the register of my hotel. He informed me that he met Mr. Frisbie on the train last week coming from Fort Worth. He introduced himself, and afterward, during their conversation, he informed him that he had shipped a lot of high grade Jerseys to Austin and expected to sell them at auction; that they had been inspected by Government veterinarians, and were pronounced to be perfectly healthy, although he had received one calf from a herd of cattle in Illinois which had been affected with pleuro-pneumonia, but none of the cattle shipped had been exposed to the herd of registered cattle. Mr. Groom further told me that Frisbie's cattle were 3 miles out of the city, on Mr. Love's farm. (This is true, as was since admitted by Mr. Frisbie.)

This morning I called at the residence of the mayor, but he was absent. I then called upon the sheriff, who informed me that the cattle were unloaded here and held for a day in the yard of French & Weed, liverymen. I called on these gentlemen, and Mr. Weed gave me a very succinct account, viz: The cattle were taken from the cars by him; they were very thin and gaunt; some had a slight cough, and several breathed very quick, to which he called Frisbie's attention. They remained for a day and a half, and were then driven to Mr. Love's farm.

In the afternoon I called on the governor and made myself known, but he ignored my business, stating that he could do nothing and would not meddle, but would leave it to the Government to adjust; that Frisbie had shown to him certificates of health from inspectors of the Bureau pronouncing the cattle healthy, and that he could not see what Commissioner Loring was after; that evidently a mistake had occurred somewhere.

I next called at the house of Mr. Holland, of the Farm and Ranch, where Mr. Frisbie is stopping, but found him absent. I left my card and an invitation to call on me in the morning. A few hours later he appeared. He showed me a certificate of the copy inclosed, and another from Dr. Hagyard, written in exactly the same form as the former, *verbatim et literatim*. He also showed me a printed certificate of health issued by your Department, in the name of Dr. Woodroffe, given to Mr. Dye. It struck me as being rather peculiar that all three of these bills should be in exactly the same form, although Dr. Hagyard's antedated that of Woodroffe's by seven days, in the Frisbie & Lake examination. In addition, Mr. Frisbie produced sworn affidavits of four parties who had charge of the inspected cattle, and who had cattle of their own in pastures with them, showing forth that no death or disease had occurred among them.

Mr. Frisbie seemed somewhat indignant because the cattle had been followed after all these precautions, and when I asked the privilege of examining them he said he would grant the request, but that I must give him a free bill of health if I found them free from pleuro-pneumonia. I replied that I could not do so under present circumstances for the following reasons: That the bills of health issued by Hagyard and of Woodroffe did not state whether or not the said cattle had been exposed to the infected herd; that I did not know whether the cattle shipped by him were *the cattle* examined by them; that your telegram to the governor of this State and the one to myself led me to conclude there was cause for believing that some of the stock had been exposed, consequently I could not conscientiously give a certificate of health, even if I found no evidence of pleuro-pneumonia on examination. He then said he would have to protest against any examination, and might just as well throw the cattle upon your hands and look for pay from the Government afterward. I told him I could not do otherwise than stated until I heard from you, and had the positive assurance that these cattle had not been exposed to contagion for the past two months. Mr. Frisbie then said you could investigate it thoroughly—you could obtain the affidavits of a hundred neighbors and residents at his place and satisfy yourself of the truth of his statements—that then he would be willing to submit to the final examination.

Later in the day I again met Mr. Frisbie. He then felt like leaving the cattle with Mr. Love on commission and go home and fight it out. He also desired to consult Judge West and obtain his advice before he would allow anything to be done in the matter.

After supper I saw Dr. Smith, who claims to be a graduate of Columbia College. He said he had conversed with Mr. Frisbie several times since his arrival with the cattle, and since he had heard of the trouble he had requested the privilege of going out and examining them, but that Mr. Frisbie said he would not allow him to do so.

Mr. Frisbie is afraid that if any further delay occurs he may lose some of his cattle by Southern fever, and that it might then be attributed to pleuro-pneumonia. I made the request that I be allowed to make an autopsy on any which might die during my stay here, but he would not consent to it for the present. I furthermore told him that I would rather examine his cattle a week hence than now, for the reason that some of them were yet suffering from the shipment. You will understand what I meant by that. He claims they were very fat—fat enough for beef—when he shipped them,

but some of those who saw them say a number of them were extremely poor when they landed here, and some appeared to be sick. This, of course, is at second hand, and may not be reliable.

Yours, to command,

M. R. TRUMBOWER.

Hon. GEO. B. LORING,
Commissioner of Agriculture.

AUSTIN, TEX., *January* 12, 1885.

Hon. GEO. B. LORING,
Commissioner of Agriculture:

I saw the governor; he cannot quarantine and don't propose to meddle. Frisbie protests against an examination unless I am willing to give a free bill of health if I fail to find pleuro-pneumonia. He holds such a bill from E. T. Hagyard, dated December 16, and a similar one from H. A. Woodroffe, dated December 23. These show an examination of 146 head of registered and unregistered Jerseys. He has affidavits from four persons on whose farms these cattle were held, showing that no disease or death occurred among them. I have no evidence that all of the cattle shipped here have been examined, or that none have been exposed. From your telegram I infer that you have knowledge of exposure to the infected herd or identity with them, therefore I cannot accept his proposition until you or he furnish positive proof of the non-exposure of all the cattle here. He will allow you to make a thorough investigation at Cynthiana to prove the non-exposure. He telegraphed to Judge West for advice. He shipped 124 head, lost 5 on the way; are now held 3 miles from Austin and advertised for sale on the 29th. I will cause no unnecessary alarm here during this week's stockmens' convention. I wait for instructions.

M. R. TRUMBOWER.

Dr. Hagyard's certificate referred to by Dr. Trumbower was published in Messrs. Frisbie & Lake's advertisement as follows:

CYNTHIANA, KY., *December* 16, 1884.

This is to certify that I have this day examined, at the request of Messrs. Frisbie & Lake, the following unregistered Jersey females and registered bulls running with the same, viz: 11 cows and heifers upon the farm of John Moore, 6 miles from Cynthiana; 58 heifers and 3 bulls upon the farm occupied by George Mitchell, 6 miles from Cynthiana; 57 cows and heifers and 17 bulls on farm occupied by A. T. Fitzwater as tenant of J. K. Lake, 3 miles from Cynthiana.

After a careful and thorough examination of these cattle, I find that they are in a very healthy, thriving condition, and altogether free from disease, contagious or otherwise.

E. T. HAGYARD,
Veterinary Surgeon.

Dr. Hagyard appears to have been satisfied at the time of giving this certificate that the cattle he examined had never been exposed to the contagion, as he states in the annexed letter written to the Kentucky *Stock Farm*, but how he could reach such a conclusion after having been present at the Lexington meeting of stockmen, where Messrs. Frisbie & Lake stated that this whole herd of 250 head had been exposed, and after having accompanied the stockmen's committee to Frankfort on September 22, where arrangements were made for appraising this whole herd with a view to its slaughter because of this exposure, I am unable to say. His letter to the Kentucky *Stock Farm*, dated Lexington, Ky., January 27, 1885, is as follows:

The question of pleuro-pneumonia having arisen in reference to Frisbie & Lake's herd of Jerseys, occasioned by those gentlemen shipping their unregistered cattle to Texas, and the shipping of part of the herd in which pleuro-pneumonia existed to Tennessee, has caused a good deal of anxiety among breeders, and fear that this action on the part of Frisbie & Lake will be attended with serious effects to the country. It has also aroused the Bureau of Animal Industry into action, the chief of the veterinary staff being dispatched to Kentucky, Tennessee, and Texas to examine the cattle.

On the 16th of December, at the request of Messrs. Frisbie & Lake, I examined the unregistered herd, and found them healthy. I gave a certificate to that effect, but before doing so I had positive statement, not only from Frisbie & Lake, but from the parties who were keeping the cattle, that there had never been any communication

between them and the distressed herd, and that they had not been nearer than the distance at the time between them. They were in three lots; the nearest of them to Cynthiana was 4 miles distant, and the others from 5 to 8 miles. On public grounds I deemed it essential to satisfy myself that there had been no chance of contagion. Having done so, I gave the certificate freely, considering that there was no more danger of spreading the disease by a removal of those cattle to another locality than there would be by moving cattle from neighboring farms. Dr. Woodroffe, the Government inspector, was at Cynthiana some days after I was there. He saw the cattle, and gave a similar certificate as myself, but he being a Government employé, and because he did not apprise the Department of the health of the herd, and the intention of the owners to remove them before giving the certificate, he was, I am informed, dismissed. I did not at that time see the herd in which pleuro-pneumonia had existed, but considering the insidious character of the disease and the length of time it will remain latent, it was at least premature to move them and incur the risk of carrying the contagion to other localities.

Below will be found another communication from Dr. Hamilton:

JACKSON, TENN., *January* 16, 1885.

SIR: Senator Jackson writes me to-day and requests me to keep our cattle up. As soon as I got your dispatch I ordered a strict quarantine, and they have not been with any other cattle since, nor before, for they were driven out to the farm and have been kept up ever since. They have not been sick since their arrival. I think Frisbie & Lake are entirely reliable, and they informed me that none of them had been sick at the time of my visit there, about the middle of October, and they were all well then. So it has been three and a half months. I have examined their lungs to-day, and, in fact, nearly every day, and if they are not sound I have learned auscultation and percussion in vain, though I know absolutely nothing of veterinary medicine only from analogy, nor have I ever seen anything that pretended to be an authentic description of pleuro-pneumonia. I saw a case of it at Mr. Frisbie's on my visit in October—that bull that was lost—and it was as easy to tell that he had pneumonia as it is in the human subject.

I shall look forward to Dr. Salmon's visit with pleasure, as I believe I am right as to their being well, and I want his vindication. You need have no fears about my shipping or allowing any contact, for I have been badly scared. Our cattle are not for sale. We bought them to breed from. Our cattle have improved in condition and milking ever since their arrival. While, of course, I think I am right, I don't know, and it will take time or a competent veterinary surgeon to tell. I can only judge from their appearance.

I stated the facts to the attorney-general of the Federal court here. He said that I had not violated any law. Let me know at about what time Dr. Salmon will be here.

Yours, truly,

F. B. HAMILTON,
President Jackson Jersey Breeders' Association.

Hon. GEO. B. LORING,
Commissioner of Agriculture.

About this time Dr. Trumbower was recalled from Austin by order of Commissioner Loring on account of the protests made by Frisbie & Lake's counsel. These gentlemen pretended to believe that Dr. Trumbower was prejudiced against them, and through their counsel asked that any inspection of their cattle should be made by the Chief of the Bureau. Accordingly I left Washington January 20, reaching Cynthiana, Ky., on the 21st. Mr. Lake stated that they still had about 17 head of the unregistered cattle, among which were some of the most unthrifty ones at Cynthiana. I desired to see and examine these animals in order that a definite conclusion might be reached as to whether they were actually affected with pleuro-pneumonia, but, acting with the advice of his counsel, Mr. Lake absolutely refused to allow such an examination. They placed this action upon the ground that in no event could the Government grant them any relief, and that every examination was liable to do them injury by revealing the presence of disease, or, possibly, by a mistaken diagnosis, such as any one might in their judgment

make. When his attention was called to the shipment to Texas from this herd, the suspicion that these animals were under, the vast injury that might be done to the cattle industry of the nation by the dissemination of the plague, and that a regard for his own interests as well as for that of the country at large would seem to make an investigation very desirable, he simply replied that they did not consider it to their interest to have such an inspection made.

To remove one point raised in his objections to inspection, I then offered that in case any one of the unregistered animals presented any signs of disease upon examination, and he was dissatisfied with the diagnosis, that I would buy and slaughter the animal in the presence of properly qualified witnesses, and thus definitely settle the question upon its merits. This proposition was also rejected. Not being able to accomplish anything at Cynthiana, I proceeded the following day to Jackson, Tenn., to investigate the conditions of the animals shipped there from Frisbie & Lake's herd.

INVESTIGATIONS IN TENNESSEE.

On January 24, an examination of the cattle at Jackson revealed the following conditions:

Constance, No. 16.—Slight dullness on percussion over the lower part of the right lung. Otherwise no abnormal symptoms.

No. 2.—Dullness and slight creaking over the posterior part of right lung.

No. 136 (fawn calf).—Increased respiratory murmur over left lung. Crepitation over the whole of right lung, with a creaking sound over the upper portion, and loss of respiration and dullness over the lower posterior portion.

No. 28.—Loud and harsh respiration.

No. 153.—Increased respiratory sounds on left side and decreased on right side.

No. 22.—Dullness over posterior part of right lung.

No. 31.—Dullness over left lung, with creaking sound and diminished respiration; creaking over posterior part of right lung.

Bull (name not known).—No abnormal signs.

No. 19.—Lungs and respiration normal.

Best Regards, No. 89.—Dullness and loss of respiration over the lower posterior portion of right lung.

No. 85 (Careless Lass).—Abnormally loud respiration.

Nos. 199, 23, 94, and 68 (Balky).—Normal respiration.

Flora of Orange Peel.—Can find no signs of disease.

No. 86.—Dullness, loss of respiration, and cooing sound over the lower part of right lung.

Chickapie.—Dullness, loss of respiration, and crepitation over lower part of right lung.

Absoloma.—Apparently in good health.

Miss Meadows.—Dullness over the whole left lung, with wheezing respiration over the superior portion.

Three calves.—No signs of disease.

The following letter, written in reply to inquiries by a committee of the representatives of the stock associations of Tennessee, contains some additional information bearing upon this matter:

JACKSON, TENN., *January* 24, 1885.

GENTLEMEN: I have the honor to acknowledge the receipt of your communication of the 22d instant, asking for a report in regard to the cattle recently brought to Jackson, Tenn., by Dr. Hamilton, from the infected herd of Frisbie & Lake at Cynthiana, Ky., and making certain inquiries in regard to the characters of the contagious pleuro-pneumonia of cattle.

I have this day examined the cattle referred to, which belong to a company of which Dr. Hamilton is president, and find that while none of them have the disease in the acute form, seven have been sick, and six of these still present more or less evidence of lung trouble resulting from this disease. The ordinary observer would not suspect these cattle of having been affected with this plague. They are all eating

well now and gaining in flesh, and the symptoms which I refer to are only brought out by a careful examination of the lungs.

"Flora of Orange Peel," a cow which I examined at Cynthiana last September and found sick at that time, with, if I remember correctly, one lung badly affected, does not show any signs of the disease which I can detect. Two calves, Nos. 136 and 31, and cows Nos. 89 and 86, and two other cows, called "Chickapie" and "Miss Meadows," are the ones which still have signs of lung disease.

In reply to your questions I would say—

(1) It is the experience of all countries where pleuro-pneumonia prevails that cattle which have had an attack and apparently recovered are still capable of infecting other cattle.

(2) It is not definitely known how long such animals continue to be dangerous. Instances are recorded where apparently well cattle have infected others fifteen months after the acute stage of the disease had passed. It is probable that the period varies with different animals, and I should not consider it proper to let such animals mix with others for at least eighteen months after apparent recovery, and, as a matter of absolute safety, would prefer that they should never be permitted to come in contact with stock that could be affected.

(3) Animals that are exposed to the contagion usually sicken after a period of from thirty to sixty days, but sometimes they show no symptoms until ninety days, and some authorities believe they may go as long as one hundred days.

(4) The only absolutely safe way of dealing with this disease is to kill all that have been affected with it or that have been exposed to the contagion. Stables should be disinfected and not used for a year afterwards.

The cattle in the herd under consideration are now well isolated, and I have the fullest confidence that the owners will use every precaution to keep them from coming in contact with other animals. But there is always some danger of the disease being carried to other herds by the attendants or by visitors, as has happened in two cases that have recently come under my observation. This danger is not so great now as it would be if the disease should again assume the acute and more virulent form. There is one other way in which the disease sometimes spreads from quarantined cattle that past experience has shown to be worthy of consideration. When a herd contains valuable bulls, as this one does, there are parties willing to take the risk of securing the services of such animals by bribing the attendants without the knowledge and against the wishes of the owners.

In conclusion, I desire to state that I have been cordially received and given every facility for making my examination by the owners of these cattle. I have been much impressed by their frankness and their evident desire to do all in their power to prevent damage to the community, and I have been gratified to learn that they are honorable gentlemen who stand high in the estimation of those who know them.

Very respectfully,

D. E. SALMON,
Chief of the Bureau of Animal Industry.

Hon. THOS. H. MALONE,
And other representatives of live-stock associations of Tennessee.

This herd in Jackson was kept in close quarantine by the owners, and was finally taken in charge by the State authorities.

No further veterinary inspections were made of this herd until December 2 and 3, 1885, when, by request of the governor, Dr. Wray was directed to make a thorough examination of each animal. The reports, more or less indirect, which had been received up to that time were to the effect that no symptoms of disease had been observed, and that the owners were becoming impatient to have the quarantine restrictions removed. This also seems to have been the understanding of the State Live-Stock Commission, as they had reached the conclusion that this herd might safely be released.

Dr. Wray's investigations brought out the fact that one calf had died, and was supposed to have had lung disease, although no *post-mortem* examination was made. He also found by an examination of the individuals that there were at that time nine chronic cases of pleuro-pneumonia. The names of the affected ones were: Sabrinette, Careless Lass, Flora of Orange Peel, Chickapie, Miss Meadows, Floss Lawrence, Nora Lawrence, Fancy Cruiser, and Cicero Sunbeam. At the time this herd was examined by the Chief of the Bureau the names could not all

be obtained and the numbers were taken, so it cannot be determined how closely the two examinations corresponded. Dr. Hamilton informed Dr. Wray that our conclusions were the same in every case with the exception of Sabrinette. This cannot be the case, however, as in the first examination but 7 affected ones were found. It seems likely, therefore, that two or more animals had been mildly attacked during the period that elapsed between these examinations. The death of the calf confirms this conclusion.

These facts illustrate the difficulty of deciding at what time a quarantine can be safely raised when the animals are not kept under constant veterinary supervision. Even a slight attack that might escape the notice of the owner would be sufficient to start fresh outbreaks if the herd were released and allowed to mingle with other cattle within six months or a year afterwards. It is such facts as these that have convinced the experienced authorities of the various countries of Europe that the only safe way to deal with pleuro-pneumonia is to destroy every animal which has been exposed to it before there can be an opportunity of mingling with uninfected cattle.

By advice of Dr. Wray the State commission made arrangements under which this herd will be held in quarantine until October 1, 1886.

INVESTIGATIONS IN TEXAS.

Leaving Jackson, Tenn., January 25, 1885, I reached Austin, Tex., January 27. There was here a public sentiment of decided hostility to the Bureau of Animal Industry, an evident feeling that Mr. Frisbie, who was there in charge of his cattle, was a greatly wronged man, and that there was no reason for entertaining a suspicion of danger in regard to his herd. This feeling had been worked up by and was based upon documents given in full below, and which at the time were distributed as a part of Frisbie & Lake's advertisements, and were used in the editorials of the local newspapers. Not being able to understand how gentlemen who have any regard for their reputation could sign such statements or make such affidavits in view of the facts related above, I append these documents without any attempt at explaining them. It is very evident, however, that such papers would have a very great effect in shaping the opinions of those who had not been conversant with the history of the herd as detailed above.

AFFIDAVITS.

The affidavit of George W. Mitchell, who says that he is a resident of Harrison County, Ky., that he is well acquainted with Messrs. H. D. Frisbie and J. K. Lake, who comprise the firm of Frisbie & Lake, and knows them to be reliable gentlemen; and affiant further says that for six months last past he has seen almost daily a large portion of the unregistered cattle and bulls running with same, belonging to said Frisbie & Lake, and affiant says he is the Mitchell named in the certificate of Dr. Hagyard: that he has seen almost daily the 61 head mentioned therein as being on his, affiant's, farm, for the last 6 months, and affiant confidently asserts that there has not been a single case of sickness of any kind among them; that said cattle have been running for some time with his own, and he has not the least fear of disease among them or his cattle.

Affiant says he has no interest whatever in said cattle.

GEO. W. MITCHELL.

STATE OF KENTUCKY, *County of Harrison:*

Subscribed and sworn to before me by George W. Mitchell this December 20, 1884.

PAUL KING,
Notary Public, Harrison County, Kentucky

The affidavit of A. T. Fitzwater, who says that he is a resident of Harrison County, Kentucky; that he is well acquainted with H. D. Frisbie and J. K. Lake, and knows them to be reliable gentlemen, and affiant says he is the Fitzwater named in the certificate of Dr. Hagyard, that the cattle mentioned therein, viz: 74, as being upon the farm occupied by him are at this time all sound and healthy, and have so been ever since they have been upon his place, covering a period of over four months; affiant says he has never seen a sick or diseased animal among them during that time, and affiant confidently asserts that all of said cattle, viz: the 74 head above named, are perfectly sound and free from disease, and have so been ever since they came under his observation. Affiant says he has no interest in said cattle.

A. T. FITZWATER.

STATE OF KENTUCKY, *County of Harrison:*

Subscribed and sworn to before me this December 19, 1884.

[L. S.]

PAUL KING,
Notary Public, Harrison County, Kentucky.

The affidavit of James H. Waits, who says that he is a resident of Harrison County, Kentucky; that he is well acquainted with Frisbie & Lake, and knows them to be reliable gentlemen; that he has had frequent observation of the cattle belonging to Frisbie & Lake, which have been upon the farm occupied by A. T. Fiztwater, and affiant says he has never seen any sickness or disease among them; on the contrary, said cattle have always appeared to be sound and healthy. Affiant says he has no interest in said cattle.

JAS. H. WAITS.

STATE OF KENTUCKY, *County of Harrison:*

Subscribed and sworn to before me by James H. Waits this 22d December, 1884.

[L. S.]

PAUL KING,
Notary Public, Harrison County, Kentucky.

The affidavits of John B. Stevens and Joseph R. Stevens, who say that they are residents of Harrison County, Kentucky; that they are well acquainted with H. D. Frisbie and J. K. Lake, who compose the firm of Frisbie & Lake; and affiants say they know them to be reliable gentlemen; and affiants say that for the six months last past they have had almost weekly observations of a great number of the unregistered cattle belonging to the said firm of Frisbie & Lake, including almost the entire herd of unregistered cattle and bulls, and affiants confidently assert that there has never been a single case of disease among them come under their observation; and affiants say that, having no fear of disease among said cattle, they have both purchased some of said cattle from Frisbie & Lake, and are perfectly satisfied that no disease whatever exists among said cattle. Affiants say that they know the 11 head named in the certificate of Dr. Hagyard as being on the farm of John Moore are not now and have not been diseased, having especially observed them and seen them for a long time Affiants say they have no interest in said cattle.

J. B. STEVENS,
J. R. STEVENS.

STATE OF KENTUCKY, *County of Harrison:*

Subscribed and sworn to before me by J. B. Stevens and J. R. Stevens this 24th day of December, 1884.

[L. S.]

PAUL KING,
Notary Public, Harrison County, Kentucky.

The affidavit of John W. Moore, who says that he is a resident of Harrison County, Kentucky; that he is well acquainted with Mr. H. D. Frisbie and J. K. Lake, who compose the firm of Frisbie & Lake, and knows them to be reliable gentlemen; and affiant further says that for six months last past, he has seen almost daily a large portion of the unregistered cattle belonging to said Frisbie & Lake, especially those on the Mitchell place; that he has frequently, almost every week, been among them, and he now says that there never has been the least sign of any disease among said cattle; that, on the contrary, they are healthy and thrifty, and that so confident was affiant that no disease existed among said cattle, he purchased 10 of the same, and turned them in with his own cattle, where they remain; and affiant says he is now wintering a portion of said Frisbie & Lake's stock, running them with his own. Affiant says he has no interest whatever in said cattle.

JOHN W. MOORE.

STATE OF KENTUCKY, *County of Harrison:*

Subscribed and sworn to before me by John W. Moore this 20th December, 1884.

[L. S.]

PAUL KING,
Notary Public, Harrison County, Kentucky.

In connection with the affidavits of A. T. Fitzwater and James H. Waits, as recorded above, it may be of interest to state that I met Mr. O. A. Woods, of Cynthiana, in that town on February 7, 1885, and in the course of a conversation in regard to these cattle, he stated to me that he and Mr. H. Redmond, jr., were out hunting on Thanksgiving day, that they crossed the farm of J. K. Lake, on the far side of the river (the one tenanted by A. T. Fitzwater), and that they then and there saw one of the Jerseys lying dead in the field. Mr. Woods had no interest in the matter, and simply made this as a statement of fact. There is, consequently, upon the one side the admission of Frisbie & Lake at the meeting of stockmen, and in their letter of September 18 to the Department, that their whole herd, of 250 head, had been exposed; there is the fact that the Chief of the Bureau of Animal Industry found sick cattle at the farm tenanted by Fitzwater on September 24; there is the admission of four affected herds in Frisbie & Lake's telegram of September 27, and there is the statement of Mr. Woods that he saw one of the animals on the farm occupied by Fitzwater lying in the field dead on Thanksgiving day. On the other side there are the affidavits given above that none of the cattle on this farm had been sick during their sojourn there.

On the evening of January 27, 1885, I had an interview with Mr. Frisbie in the hotel at Austin, Tex., in presence of Maj. F. P. Holland, editor of the Texas *Farm and Ranch*, and of Colonel Cardwell, of the *Austin Statesman*. At this interview Mr. Frisbie asserted with the most positive emphasis that none of the unregistered Jerseys had ever been exposed to pleuro-pneumonia; that he never had admitted their exposure; that none of them had ever been sick; that in regard to the two which I had picked out as sick on the farm occupied by Fitzwater, his understanding was that these only had weak lungs; that they were, however, immediately separated from the remainder of the herd and had never shown any further signs of sickness. He then asked me that in case he permitted an inspection of the herd then in Texas and I found no cases of pleuro-pneumonia, if I would give him a clear bill of health for them. My reply was that being satisfied that a number of the animals had recently been exposed to pleuro-pneumonia and were liable to show the disease at any time whether they were yet affected or not, I could not under any circumstances give him such a certificate as he demanded. He then absolutely refused either to allow me to inspect the living animals or to examine the dead ones and learn the cause of death. This terminated the interview.

January 28 I had an interview with Governor Ireland, and laid the facts as I understood them before him for consideration, offering the professional services of the Chief of the Bureau or of any of its inspectors if he needed such assistance. His answer was that they proposed to do things according to law in Texas, and as there was no law applicable to such a case there was nothing to be done. When reminded of the enormous live-stock interests of Texas, and of the desirability of keeping a supervision over this suspected herd until all danger was over; of the fact that the mere shipment of such a herd to his State might damage the cattle trade millions of dollars unless a thorough investigation was made; and that there were at that time dead animals from this herd in regard to which the cause of death should be ascertained, his response was that no investigations could be made except by the courtesy of Mr. Frisbie.

It was now very plain that these animals would be sold, no matter what their condition. The law establishing the Bureau of Animal In-

dustry gave no authority to interfere, or to make an investigation against the desire of the owner of the herd, and having properly notified the State authorities the Chief of the Bureau felt that his duty and responsibility were ended until further developments should occur.

It is probably true that there was no law on the statute books of Texas for properly dealing with such an emergency, but it is equally true that the legislature was in session at the time, and, in the opinion of high officials of the State government, a law could have been obtained within a few days if there had been a public sentiment in favor of it. As a matter of fact this sentiment did not exist, and one of the reasons was the unscrupulous manner in which evidence was collected, facts perverted, and false statements made to give the impression that there was no reason for an investigation of this herd. The affidavits published in Austin by Mr. Frisbie have already been given. January 9 the Austin *Daily Statesman* published an editorial which seems to have been inspired by Mr. Frisbie, and which illustrates the manner in which the case was worked up. Referring to Mr. Frisbie it goes on to say:

He is one of the most eminent breeders in this country, and enjoys a wide reputation as such. After consultation about the best point to hold an auction sale of Jerseys, he decided to come to Austin. In a copy of the Texas *Farm and Ranch*, dated December 15, there was an elaborate notice of the conclusion reached by Mr. Frisbie, and a full statement was made as to the prevalence of pleuro-pneumonia on one of his farms near Cynthiana, Ky. On one farm they keep nothing but the finest registered stock. Through a calf shipped to that farm from Illinois pleuro-pneumonia did break out on the farm, and several head of their cattle died. The rest of the diseased animals were killed. There has been no disease on that farm for months, and the cattle there are all in a healthy condition. But none of the cattle shipped to Texas were ever on the farm where the disease prevailed. The cattle here were taken from farms several miles distant from the diseased herd. The cattle that reached Austin are evidently in a healthy condition, though they looked badly just after reaching here from ten days' confinement in the cars. These cattle have been held together for some weeks, and veterinary authority goes to show that by this time some of these would have been sick had any of them been exposed to disease. The misapprehension at Washington arises from the fact that Frisbie & Lake had diseased cattle on one of their farms, and this leads to the opinion that the cattle shipped to Texas, which were never with diseased stock, were liable to disease. Mr. Frisbie is satisfied the Department of Animal Industry will set the matter all right. Early in December he applied to this Department for an inspector to examine these very cattle which he was then holding for shipment to Texas, and the following telegram was received.

Then follows the telegram of October 8, referred to above, with the date changed from October, 1884, to January, 1885, together with the certificates of Dr. Hagyard and Dr. Woodroffe.

January 28, the morning after the interview between the Chief of the Bureau and Mr. Frisbie, in the presence of the representative of the *Statesman*, that paper came out with an editorial headed, "Nothing wrong with those Jerseys from Kentucky," and after mentioning the presence of this herd on the farm of Captain Love it goes on to state:

Shortly after their arrival in Austin, however, a report reached here from Washington that the cattle were affected with pleuro-pneumonia. The report was calculated to do great injury to Messrs. Frisbie & Lake, who were astonished at the charge, knowing that their cattle were not, nor had not at any time been, so affected. In proof of their denial the gentlemen have the following evidence:

Governor J. Proctor Knott, of Kentucky, in reply to a letter from Commissioner Loring, states: "This clamor about disease in the cattle shipped to Texas is utterly uncalled for and detrimental to the interests of Messrs. Frisbie & Lake." Governor Knott also eulogizes Dr. Hagyard, who inspected the herd, as an eminent veterinarian.

After Mr. Loring received the letter from Governor Knott, the following telegram to the attorney of Messrs. Frisbie & Lake was received:

WASHINGTON, *January* 20, 1885.

C. W. WEST,
Cynthiana, Ky.:

Have heard from Governor Knott. Declines to act. Thinks the clamor which has been raised over this transaction has not only been uncalled for, but unjust and

detrimental to the interests of Frisbie & Lake. Regret that I cannot pay expenses of quarantine under these circumstances.

GEO. B. LORING,
Commissioner of Agriculture.

The following letter is from Dr. Woodroffe, who is still in the employ of the Government:

LEXINGTON, KY., *January* 19, 1885.

GENTLEMEN: I would advise you to flatly deny the statements that have been made by the Chief of the Bureau regarding the cattle that were shipped to Austin, Tex. They have no earthly grounds for calling them infected, and the affidavits of those men is sufficient evidence that they were never exposed. It is simply a libel on your cattle, and will greatly affect their sale. You can use Dr. Hagyard's and my name freely in the matter.

When Dr. Salmon arrives I should certainly demand the result of his examination of your stock in writing.

If you feel disposed to offer $1,000 reward for the discovery of a case of pleuro-pneumonia in the herd that went to Austin, do so, and I will give you banker's references for me for half the amount.

Yours, very truly,

H. A. WOODROFFE, M. R. C. V. S.,
Veterinary Inspector, Bureau of Animal Industry.

FRISBIE & LAKE,
Cynthiana, Ky.

The subjoined telegram, signed by the parties whose names are appended, has been received by H. D. Frisbie at Austin, Tex.:

CYNTHIANA, KY., *January* 17.

H. D. FRISBIE:

We have every reason to believe, and do believe, that the cattle shipped by Frisbie & Lake to Texas have never been diseased with pleuro-pneumonia, and that cows from that herd are now running at large in this county.

LUCIUS DESHA, JR.,
Presiding Judge of Harrison County.
L. M. MARLIN,
State Senator of Kentucky.
R. M. COLLIER,
County Clerk.
J. S. WEATHERS,
Cashier National Bank of Cynthiana.
WM. ADAMS,
Mayor of Cynthiana, Ky.

* * * * * * *

Yesterday afternoon Dr. Salmon, Chief of the Bureau of Animal Industry, arrived at Austin. Captain Frisbie, accompanied by Major Holland and a representative of the *Statesman*, called on him at his room in the Hotel Brunswick. The interview was brief and barren of satisfactory results. Captain Frisbie put the same question to him as he did to his predecessor, "Will you, in the event that the cattle are found in good health (as I know them to be), give me a certificate to that effect?" said the captain. The doctor responded that he did not come here for the purpose of giving certificates, and would not agree to what certainly seems a fair and square proposition on the part of the owner of the Jerseys. With this the conference broke up. Captain Frisbie intends to sell his cattle on the 12th of February, at which time they will have been here six weeks. Nobody believes them to be in the least affected, and the injurious reports as to their being diseased are without the slightest foundation in fact.

The above certificates signed by prominent citizens of Harrison County, Kentucky, together with the letter of Governor Knott and the tone of the Austin press are sufficient to explain the failure of the effort to have an investigation made of the condition of the Frisbie herd before it was sold. Information collected later will now be introduced to show the real facts of the case. At the time of the sale, an advertising bill was distributed on which were two statements of Dr. F. J. Smith, of Austin, who had examined the cattle. These statements were published side by side by Mr. Frisbie to show that they were contradictory.

While the two statements may not be entirely consistent in all repects, they furnish an indication of the condition of the animals at that time which is not to be overlooked. The certificate of the stockmen who examined this herd the day before the sale confirms this impression and demonstrates that the animals were not in a remarkably healthful and thriving condition. These documents are as follows:

Considering that the animals have come such a long trip, and the severe weather, there has been *but slight mortality* among them. I visited the cattle January 25, and learned that only 3 had died. Two were down, and in my opinion were unable to get up. The general health of the cattle was better than I expected to find.

F J. SMITH,
Veterinary Surgeon.

JANUARY 26, 1885.

The following is a statement of Dr. Smith in a circular distributed in Austin, February 11, 1885:

I visited the herd of Jersey cattle owned by Frisbie & Lake, now at Mr. Love's dairy ranch near this city, and *found a majority of the herd* sick, 1 dead under the shed and another down, unable to rise; a number standing, heads extended, backs arched, increased breathing, hair rough, and the animals in a very poor condition. The general condition of the herd is similar to that found in contagious pleuro-pneumonia. No competent person has been allowed to make a *post-mortem* examination.

F. J. SMITH,
D. V. S., U. S. A.

AUSTIN, TEX., *February* 11, 1885.

We, the undersigned stockmen, certify that we have this day made a careful examination of the Jersey herd belonging to Messrs. Frisbie & Lake, and found them thin in flesh and showing evidence of bad treatment.

We further, at the request of the owners, selected the poorest and most sickly-looking animal in the herd and killed it in our presence, and Drs. Carothers and Taylor carefully examined all of its organs, and stated that they found no evidence of disease, and especially of the lungs.

In our opinion the herd is free from disease, and especially from contagious pleuro-pneumonia.

A. E. CAROTHERS, M. D.
M. A. TAYLOR, M. D.
IKI T. PRYOR.
SETH MABBY.
GEO. W. LITTLEFIELD.
F. M. MADDOX.
JAMES W. TAYLOR.
C. E. ANDERSON.
J. M. DAY.
W. S. CAROTHERS.
JOHN W. DRISKILL.
A. L. CASPARIS.
J. R. BLOCKER.

This examination of a single animal selected from a herd of that size simply because it had an unthrifty appearance was of no value in deciding whether the remainder of the cattle were healthy or were infected. Animals affected with chronic pleuro-pneumonia are not always the worst-appearing ones in the herd; on the contrary, they are often the very fattest and look the healthiest, as was the case with the cow which caused the outbreak in Connecticut in 1883. The only way to determine that such a herd of animals is free from danger is for an experienced veterinarian to carefully examine the lungs of every animal in it by auscultation and percussion, and then to keep the whole lot of them under professional supervision for three months to make sure that no new cases develop during that time. The examination made by the stockmen in this case was worse than useless, because it inspired a feeling of security in the minds of people ignorant of the characters of the disease, while it was of no value towards demonstrating the freedom from contagion. In this case, as in many others that have come under my observation, members of the medical profession were responsible for thus deceiving the public in regard to their ability to detect this plague. As a rule the more intelligent of the medical profession recognizing how

much they still have to learn about those diseases which they have studied and observed, see how absurd it is for them to claim any special knowledge of maladies which they have never studied and never seen. But there are others, living examples that "a little knowledge is a dangerous thing," who do not hesitate to make the most of the confidence reposed in them by the community, as medical men, and assert the superiority of their knowledge of animal diseases to that of the veterinarian who makes them a specialty. It is hoped that this species of quackery will in time disappear, but nevertheless it has been, during the last few years, a very annoying obstacle in the way of suppressing animal plagues.

Now as to the healthfulness of these animals that were taken to Texas, we are at present in a position to give very conclusive evidence. Dr. H. W. Rowland, an inspector of the Bureau of Animal Industry, was directed to proceed to Austin early in May, 1885, and to collect all attainable information as to this herd. He remained there until July, and from his investigations the following facts appear:

The number of cattle shipped at Cynthiana was originally stated by Dr. Woodroffe at 125. Mr. Frisbie informed Dr. Trumbower and the Chief of this Bureau that only 124 were actually taken. Be this as it may, the number landed alive at Austin was only 118. In other words, at least 6 died between Cynthiana and Austin. Between January 6, the day of their arrival, and February 12, the day of the sale, 22 animals died and 1 was slaughtered for examination by the stockmen the day before the sale. That is, of the 124 which were shipped from Cynthiana on December 27, 1884, there were remaining alive at the day of the sale, February 12, 1885, but 95 head.

What was the cause of death of so many animals it is impossible to say at this time, since the owner refused to have any examination made of either the sick or dead ones by veterinarians who were competent to decide upon the nature of the trouble. At the time the Chief of this Bureau was at Austin, he was reliably informed that the carcasses of 3 animals which had recently died could be seen upon the farm of Captain Love where the herd was kept, also that 2 or 3 head were lying in the lot too sick to stand. He, however, did not have sufficient authority to make an investigation.

During the period from February 12 to July 1, 1885, it was found by Dr. Rowland that 23 had died out of the 95 sold at Austin. In other words, only 72 animals remained alive, July 1, of the 124 which started from Cynthiana. Dr. Rowland examined a considerable part of the animals which were still alive at the time of his visit, and made *post-mortem* examinations of a number which died. In none of these did he find any evidence of pleuro-pneumonia, nor could he hear of any cases of this malady among the native cattle which had come in contact with the Frisbie herd. It is, therefore, believed that the contagion did not establish itself in this State. If any of the lot were affected with lung plague at the time of shipment or after their arrival, they probably died and the disease was not propagated from them.

It is, certainly, a most fortunate termination of this matter to find that this dreaded disease has not gained a footing on the plains of Texas, where once fairly under way it would not only be impossible to suppress it, but where it would be disseminated through the channels of commerce to every part of the country. Nor is this happy result due to any precautionary measures adopted by the local authorities, but it is in spite of their carelessness after timely warning. This instance is one of the best illustrations that could be given of the necessity for na-

tional laws to control such an insidious, and at times obscure, disease. If the contagion had been spread by that lot of animals, as it was given every opportunity to do, no one who has studied the history of this plague abroad can doubt that it would have cost our country hundreds of millions of dollars, and made the rearing of cattle a precarious business for all time to come.

RECENT DEVELOPMENTS IN REGARD TO PLEURO-PNEUMONIA IN KENTUCKY

As the officers of the Bureau of Animal Industry were not allowed by the owners of the infected cattle at Cynthiana, Ky, to go upon their premises and examine their animals, and as no law, either national or State, existed by which such an inspection could be enforced, it became necessary to suspend all action, by the Bureau, for the control and extirpation of this outbreak. Without frequent inspection it was impossible for the Bureau to keep informed of the condition of affairs, and without knowing that the disease continued to exist we could not determine how far we would be justified in attempting to enforce sections 6 and 7 of the act for the establishment of a Bureau of Animal Industry, &c., which provides penalties for the shipment of affected animals from one State or Territory into another.

The continuation of the disease in the herd of Messrs. Frisbie & Lake and its extension among other cattle in the vicinity, soon caused great alarm among the stockmen of Kentucky, and even of other States, for at any time it was liable to be carried to the most remote part of the country by the shipment of exposed or affected animals. The inability to make inspections, owing to the hostility of the owners of the infected herds, prevented the notification of such owners or of the railroad officials, as provided for in the animal industry law; and as this law only specifies affected animals, and not those which have been exposed and are liable to become affected, it is evident that there was but slight legal restraint to prevent the dissemination of this insidious and dangerous plague.

A considerable number of appeals for protection and assistance were made to the Department, of which the following are included in this report, since they show the course of events and the reason for the action subsequently taken in regard to this outbreak.

CYNTHIANA, KY., *April* 30, 1885.

SIR: I learned to-day from Messrs. Frisbie & Lake that one of their bulls, in the stable of J. K. Lake, at his home place, had pleuro-pneumonia, and that they have, perhaps, 5 or 6 head at the same stable that are quite likely to take the disease. They have removed the larger part of their cattle back to the Cox pasture, where you saw them last fall. They say none of the lot removed are sick.

Cannot something be done under the new Commissioner's construction of the law to get rid of this terrible disease in the Frisbie & Lake herd, or must we, the innocent, suffer on and on with no hope for relief? My stock are as healthy and in every way as well suited to go on the market as any in the world, but as long as this thing is agitated in the public prints I am unable to do anything.

* * * * * * *

Since writing the above I have received the *Live Stock Record*, with the inclosed printed statement. Hoping something can be done to eradicate the disease from Kentucky,

I am yours, truly,

D. A. GIVENS.

Dr. D. E. SALMON,
Washington, D. C.

The newspaper cutting inclosed was as follows:

MORE PLEURO-PNEUMONIA.

EDITOR TRANSCRIPT: Not having any sickness among our cattle since last November, we were beginning to feel that we were clear of the pleuro-pneumonia, but find the disease has again broken out. Hannibal Duke, a very fine and valuable bull, is sick and will probably die. We are fearful that it will take all summer to weed out this dreadful disease. We propose to use every precaution to prevent its spread. We give you this, for we feel it our duty to keep nothing so important from the public. The disease has been confined strictly to our registered cattle.

Yours, truly,

FRISBIE & LAKE.

CYNTHIANA, *April* 29, 1885.

Below is a copy of a letter received from ex-Senator John S. Williams:

MOUNT STERLING, KY., *June* 6, 1885.

MY DEAR SIR: The cattle plague is still lingering and killing cattle in Messrs. Frisbie & Lake's herd at Cynthiana; it has also appeared in a small herd of their nearest neighbor. At a meeting of the cattlemen in Frankfort this week, I was appointed one of a committee to wait upon Messrs Frisbie & Lake and see if some arrangement could not be made to prevent the further spread of the disease until a meeting of our legislature, when we feel sure that effective legislation will be had.

Dr. Loring, just before the adjournment of Congress, proposed, with the consent of Frisbie & Lake, to put their herd in quarantine, and pay the expenses of such quarantine, if the Governor of Kentucky would co-operate with him in so doing. I saw the correspondence between them. The governor thought there was no necessity of any action on his part, and that the Commissioner of Agriculture had as much power over the subject without as with his co-operation. Dr. Loring was not satisfied with the non-action of the governor, and the matter was dropped. Frisbie & Lake were not only willing, but anxious, that the cattle should be put in quarantine.

I think the governor can be prevailed upon now to give his sanction and support to such measures as you may adopt, and I hope you will at once put this herd in quarantine. I have notified Messrs. Frisbie & Lake that I will be at their farm near Cynthiana, on next Saturday, the 13th instant, and I hope to have a letter from you before I leave Friday evening, renewing the proposition of your predecessor.

Very truly, yours,

JOHN S. WILLIAMS.

The COMMISSIONER OF AGRICULTURE,
Washington, D. C.

To this letter the following reply was made:

DEPARTMENT OF AGRICULTURE,
Washington, D. C., June 10, 1885.

SIR: In reference to your favor of the 6th instant to Commissioner Colman, asking if he is prepared to carry out the plan of quarantine for the herd of Messrs. Frisbie & Lake, which was under consideration by Commissioner Loring, I have the honor to state that owing to the extent of pleuro-pneumonia, the small number of employés allowed the Bureau of Animal Industry, and the limited appropriation for the coming fiscal year, such a course cannot be adopted at this time. As I understand the matter, the quarantine which Frisbie & Lake are willing to accept is simply a mutual arrangement under which this Department is expected to take charge of the infected herd and pay all expenses for its care and maintenance.

A similar proposition was made by the State authorities of Missouri and was declined, because there were not sufficient funds available to undertake to control pleuro-pneumonia in this way. Our inspectors have found about 300 infected herds, containing several thousand animals, each of which the State authorities desire to have quarantined at Government expense, and it is evident that any attempt to do this would exhaust our appropriation in a few months without in any way reducing the extent of the infection.

The Frisbie & Lake herd has been a source of great anxiety to the Department, for there seems to be good reason to believe that even if by good fortune the disease

is not disseminated beyond Harrison County, it will become so firmly established there as to be extirpated only with the greatest difficulty.

Regretting the fact that under the present laws there is no way by which I can protect your cattle owners from this disease,

I remain, very respectfully,

F. C. NESBIT,
Acting Commissioner.

Hon. J. S. WILLIAMS,
Mount Sterling, Ky.

In this connection it may be added that the animal industry law seems to require that there shall be State legislation authorizing the State authorities to co-operate with the Commissioner of Agriculture, or at least giving some power to quarantine under State laws before this Department is justified in incurring such expenses. Otherwise the quarantine regulations might be broken with impunity, and could not be maintained except by the courtesy of the owner of infected herds. Such a condition of affairs would make effective quarantine impossible, and would lead to the expenditure of large sums of money without any adequate results.

This conclusion is confirmed by the decision of the Attorney-General, which is given in full in connection with the Missouri outbreak. The following paragraph is quoted here as applying to this subject:

Section 3, to which you refer, authorizes the regulations by the Commissioner of Agriculture, and supposes that these may be adopted by State executive authorities, or, as an alternative, supposes regulations by State executive authorities, which, in turn, it empowers the Commissioner to adopt. In either case of course such State executive action is to be authorized by competent State legislation.

The following correspondence with the secretary of the Kentucky State Board of Health does not need additional explanation:

STATE BOARD OF HEALTH OF KENTUCKY,
Bowling Green, Ky., June 13, 1885.

SIR: On yesterday, accompanied by ex-Senator John S. Williams and others, I visited the herds of cattle near Cynthiana, in this State, now for some time past affected with contagious pleuro-pneumonia. There are two herds involved in the trouble—on adjoining farms—one containing about 100 head and the other 16 head. The danger of infection of the cattle of this entire section seemed so great that, under a clause of our health law which gives us supervision of the food supply of the people of the State, I have placed both the herds of cattle in a provisional quarantine for one month, in order to confer with you with the view of securing such assistance as you may be authorized to give, looking to permanent protection for our cattle interests against this disease.

There is a serious question as to the extent of it, but whatever quarantine power has been conferred by our legislature is vested with us, and we are ready to co-operate with or indorse any measures you may propose which will rid us of this disease, or tide over the emergency until the meeting of our legislature in December. We have not had the question of jurisdiction raised here, as the owners of the cattle are ready to accept any reasonable proposition from us which promises relief.

I have the honor to be, very respectfully, your obedient servant,

J. N. McCORMACK,
Secretary.

COMMISSIONER OF AGRICULTURE,
Washington, D. C.

This letter inclosed a quarantine notice as follows:

QUARANTINE NOTICE.

OFFICE OF THE STATE BOARD OF HEALTH,
Bowling Green, Ky., June 15, 1885.

Whereas it has come to the knowledge of this board that contagious pleuro-pneumonia now exists in the cattle herds of Frisbie & Lake, and William T. Handy in Harrison County, in this State, and whereas this disease is highly infectious, and its existence seriously jeopardizes the food supply of the State, now, therefore, be it known,

that the State Board of Health, in the exercise of its authority in supervising the health interests and food supply of the people of this Commonwealth, have placed the said herds of cattle in quarantine, and for this purpose have established and set apart the farms of the said Frisbie & Lake, and Handy, as quarantine grounds, and they hereby command the said Frisbie & Lake, and Handy, and all others, not to remove such cattle, or any one of them, from the grounds so set apart, nor permit them to come near any public highway; and the people of Harrison County, and all others, are hereby commanded and warned not to permit any cow or cows to run at large upon the public highways, or otherwise to come near such infected cattle.

By authority of the State Board of Health.

J. N. McCORMACK, M. D.,
Secretary.

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., June 23, 1885.

SIR: This Department has been requested by some cattlemen of your State to co-operate with your board, if possible, in maintaining the quarantine of Frisbie & Lake's herd at Cynthiana, until the next meeting of your legislature, or until the next session of Congress, when some provisions may be made for the extirpation of the disease. The Department will cheerfully do anything that is possible to assist you or to co-operate with you, if your board desires such co-operation. I do not think that we could assume any quarantine expenses that would include the maintenance of animals, but we could probably send a man to Cynthiana to see that the quarantine rules were enforced, and to practice such disinfection as might be called for at any time. I think it would be a great relief to your cattle industry if we had some competent person there, acting with some authority under your law, who could state from his own observation that there was no further danger of the spreading of the disease.

I shall be very glad to hear from you in regard to this matter, and hope you will make any suggestions that may occur to you.

Very respectfully,

D. E. SALMON,
Chief of Bureau.

Dr. J. N. McCORMACK,
Secretary State Board of Health, Bowling Green, Ky.

BOWLING GREEN, KY., *July* 25, 1885.

SIR: I have the honor to inform you that I have this day completed the arrangements for the permanent quarantining of the herds of infected cattle at Cynthiana, and to request you to send a competent veterinarian to that point to assist this board in preventing the spread of the disease. In the absence of distinct authority for such quarantine it had to be arranged by mutual agreement; hence the delay. The cattlemen have placed in my hands a limited amount of money for the maintenance of the cattle, but not enough for this purpose and the policing. The herds are at present under the control of Dr. Hervey McDowell, of Cynthiana, and have been for the past month, and will continue in his charge until I hear from you. If it is in your power I would like for you to provide some compensation for McDowell, as he has done much excellent work gratuitously.

There is little change to report in the condition of the cattle since my last letter. One cow sold by Frisbie & Lake last fall infected two milch cows belonging to two farmers in the immediate neighborhood. The cow was not suspected of being diseased until within the last few days, when she was returned to Frisbie & Lake's herd, and the two exposed cows killed.

I believe we have the disease under control, but not having the fullest confidence in some of the parties interested, think it will require much care and discretion to keep it so, and I therefore request that you send us the very best man you can get to supervise the quarantine.

Respectfully, yours,

J. N. McCORMACK,
Secretary State Board of Health.

Dr. D. E. SALMON,
Chief of Bureau of Animal Industry.

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., July 28, 1885.

SIR: I am in receipt of your favor of the 25th instant, requesting that this Department should send a competent veterinarian to co-operate with your board in maintaining the quarantine of cattle affected with pleuro-pneumonia at Cynthiana.

I have conferred with the Commissioner of Agriculture, and we have decided to station such a man there the first of next month.

I see no way that we can legally compensate Dr. McDowell for his services. I am sorry that we cannot, for I am satisfied that the work of your board has been of very great value to the country at large, as well as to the State of Kentucky. We have not yet finally determined on the man for the place, but will notify you within a day or two.

Very respectfully,

D. E. SALMON,
Chief of Bureau.

Dr. J. N. McCORMACK,
Secretary State Board of Health, Bowling Green, Ky.

July 29, 1885, Dr. William H. Wray was appointed an inspector of the Bureau of Animal Industry, and was directed to report for duty as soon as possible. He reached Washington August 3, and, after receiving detailed instructions as to his duties and authority, proceeded at once to Cynthiana. He was to investigate the extent of the plague at that time, to learn how many cattle had been exposed, and to take such action as was possible under the animal industry law, the statutes of Kentucky, and, with the consent of interested parties, to arrest the dissemination of the contagion and extirpate the disease. He was directed to co-operate with the governor, the State Board of Health, and the cattlemen in any legal measures looking to this result.

Additional and interesting correspondence regarding the condition of affairs at that time is given below:

SIDEVIEW, MONTGOMERY COUNTY, KENTUCKY, *July* 28, 1885.

SIR: By letter just received from Dr. E. T. Hagyard, veterinarian of Lexington, Ky., I am informed that through H. D. Frisbie (of Frisbie & Lake) he learns that contagious pleuro-pneumonia "has appeared in several instances amongst the cattle in Cynthiana and the neighborhood." Can we not have the advantage of a portion of the fund set aside by Congress, for isolation of all the cattle of that locality? I am now satisfied, by a recent letter from Governor Knott, that he will do anything he can to aid the Department in its acts in this respect. A few of us cattlemen have furnished our State Board of Health the funds for guarding and isolating the Frisbie & Lake herd, but I am satisfied we cannot raise the means privately for isolation of the whole locality.

Yours, respectfully,

T. CORWIN ANDERSON.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture.

LEXINGTON, KY., *July* 29, 1885.

SIR: Your letter received. Since writing you I have had a conference with Dr. McCormack, and we have just completed arrangements with Frisbie & Lake to hold their cattle until January 15, 1886, subject at all times to the control of the State Board of Health or to any one acting for them.

This will give any one whom you may send the right to inspect the cattle at any and all times, and they will have no say in the matter. I have raised the necessary funds to carry the same in force, and I believe with your assistance we can have the most efficient quarantine in the country. I feel much better satisfied as to the condition of affairs, and have just learned that our governor has expressed a desire to assist.

Yours, truly,

W. W. ESTILL.

Dr. D. E. SALMON,
Chief of Bureau of Animal Industry.

EXECUTIVE DEPARTMENT, FRANKFORT, KY., *July* 30, 1885.

SIR: I have the honor to inclose for your information a letter I have just received from Mr. Thomas C. Anderson, of Sideview, Ky., and request you to take such action in the premises as may be authorized by law. I have not a copy of the animal industry bill, and am not advised as to your powers under it, or what conditions, if any, are required of the State authorities to avail themselves of its provisions. I would, therefore, be obliged if you would forward me a copy by mail.

I have the honor to be, very respectfully, your obedient servant,

J. PROCTOR KNOTT.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture.

The following is the letter referred to by Governor Knott:

SIDEVIEW, MONTGOMERY COUNTY, KENTUCKY, *July* 30, 1885.

SIR: By a letter just received from Dr. Hagyard, of Lexington, I am informed contagious pleuro-pneumonia has appeared among the town cows of Cynthiana, and in several localities of that neighborhood outside the herds of Frisbie & Lake, and Handy, now under quarantine by authority of the Board of Health of this State. This information was furnished Dr. Hagyard by H. D. Frisbie of Frisbie & Lake, who has certainly had the experience to know whereof he affirms. You will bear inmind that a very few cattle men of this State furnished money to enable Dr. McCormack to carry out the present quarantines, and I have no hesitation in saying, from my experience in raising this money, that it will be impossible to raise the funds from private sources to quarantine that whole locality which now seems necessary. But by the animal industry bill, I understand, on application of the governor of the State, that the Commissioner of Agriculture will quarantine or isolate any infected locality at the expense of the United States Treasury. Missouri, Illinois, and Ohio are reaping the benefits of the recent appropriations by Congress, as I understand it, and why not Kentucky, as we certainly are entitled to as much of it as any one. I wish to inferm you of this information, to ask you to take such steps as seem to you necessary to ascertain the truth, and if you do, to request that you call upon the Commissioner of Agriculture to protect our herds at once from the further spread of this disease by the isolation of the entire locality. Judge Buckner, of Winchester, sent me your recent letter to him upon this subject, which leads me to make this application in the hope and belief you will do all you can in the cattle interest of the State. I would add further, if the disease has appeared among as many cattle as now named, it would be too much to expect from frail human nature, that some one or more of these people will not run their cattle and sell them at the different court days and thus infect the whole blue grass region speedily.

Yours, respectfully,

T. C. ANDERSON.

Governor KNOTT,
Frankfort, Kentucky.

BOWLING GREEN, KY., *August* 3, 1885.

SIR: I am just in receipt of your telegram and a letter from Dr. McDowell, telling me of fresh cases of pleuro-pneumonia from a cow sold from Frisbie & Lake's herd last fall. I am not fully advised as to the extent of the danger, but will go up as soon as I hear from Dr. McDowell after Dr. Wray's arrival, if it seems necessary.

Very respectfully,

J. N. MCCORMACK,
Secretary State Board of Health.

Dr. D. E. SALMON,
Chief of Bureau of Animal Industry.

DEPARTMENT OF AGRICULTURE,
Washington, D. C., August 3, 1885.

SIR: I have the honor to acknowledge the receipt of your favor of the 30th ultimo, inclosing a communication from Mr. T. C. Anderson, of Sideview, Ky.

I have been in communication with the State Board of Health since they have placed the Frisbie & Lake herd in quarantine, as to what means could be adopted for co-operation between this Department and your State board. As a result of this correspondence, I have just ordered Dr. William H. Wray, an inspector of the Bureau of Animal Industry, to proceed to Cynthiana and take charge of the quarantined herds, and to see that the quarantine is properly maintained. In addition to this, the Department will authorize the expenditures necessary to make the isolation complete and to secure such disinfection as may be necessary to prevent the extension of the disease.

I inclose a copy of the act establishing the Bureau of Animal Industry, and also a copy of the "rules and regulations" adopted by me for co-operation between the United States Department of Agriculture and the authorities of the various States and Territories. As there is no State law authorizing the destruction of diseased cattle, I am willing to waive that part of the regulations which requires this of the States, and will do whatever is possible under the animal industry law.

With the rigid enforcement of the provisions of the national law bearing on this case, together with those on the statute books of Kentucky, it would seem that the quarantine might be maintained so efficiently as to prevent the further extension of the disease, and which would also relieve your State of the restrictions which other States have placed upon its cattle.

Very respectfully,

NORMAN J. COLMAN,
Commissioner of Agriculture.

Hon. J. PROCTOR KNOTT,
Frankfort, Ky.

The following rules and regulations are the ones referred to in the above letter:

UNITED STATES DEPARTMENT OF AGRICULTURE.

Rules and regulations for co-operation between the United States Department of Agriculture and the authorities of the States and Territories, for the suppression and extirpation of contagious pleuro-pneumonia of cattle, in accordance with section 3 of the act establishing the Bureau of Animal Industry.

(1) The properly constituted inspectors of the Bureau of Animal Industry are to be authorized by the governor of the State to make inspections of cattle, and to be assisted by local police authorities when this is necessary.

(2) In case of a discovery of contagious pleuro-pneumonia among the animals of any State, the inspector will immediately report the existence of the disease, the number of animals affected, and the number exposed, to the governor of the State, or to any officer or board which the governor may designate, and he will also report the same to the Bureau of Animal Industry.

(3) When the governor of the State or other designated officer is satisfied of the existence of pleuro-pneumonia as reported, all the affected and exposed cattle and the infected stable and premises shall be placed in quarantine under State laws, such quarantine to remain in force until at least three months after the destruction of the last affected animal. The animals which are sick with the disease are to be immediately slaughtered by direction of State officers and under State laws, and at the expense of the State. (In newly infected districts it is earnestly recommended that all exposed animals be immediately slaughtered.)

(4) The rules of quarantine shall be such that no animal, sick or well, can leave the infected herd except for slaughter, or be taken into it during the period of quarantine, the attendants of infected animals shall not be allowed to visit healthy herds except after change of clothing and shoes, nor shall any persons from other premises be allowed to go among the infected cattle except by special permission.

(5) The inspectors of the Bureau of Animal Industry shall be authorized to visit quarantined animals and inspect them as often as may be necessary, and no quarantine restrictions shall be removed until the Chief of the Bureau of Animal Industry certifies that this may be safely done.

(6) The Chief of the Bureau of Animal Industry shall be authorized to carry out such measures of disinfection in regard to infected premises as he may consider necessary.

(7) The salaries and expenses of the inspectors of the Bureau of Animal Industry, the necessary expenses of maintaining quarantine under the conditions prescribed above, and the expenses of disinfection will be paid out of the fund appropriated by Congress for the work of the Bureau of Animal Industry in accordance with the law approved May 29, 1884, but no compensation will be allowed for the food or ordinary care of animals in quarantine.

(8) In order to prevent the spread of the disease from one State or Territory into another, the owners of infected herds in the various States, and the railroad and transportation companies, doing business in their vicinity, will be notified by the Commissioner of Agriculture of the penalty provided for the violation of sections 6 and 7 of the act referred to.

NORMAN J. COLMAN,
Commissioner of Agriculture.

WASHINGTON, D. C., *July* 1, 1885.

The inspections made by Dr. Wray demonstrated once again the insidious and progressive character of this plague. While little was known to the outside world of any new cases of disease among the cattle at Cynthiana, while even those in the vicinity who had endeavored to keep informed were ignorant of any serious extension beyond the originally infected herd, the professional inspection showed that a number of herds were affected, and that many cattle had been more or less exposed. The particulars in regard to this will be found in the following letters from Dr. Wray, which summarizes the results of his work:

CYNTHIANA, KY., *August* 17, 1885.

SIR: During the past week I think I have got the disease here within bounds, having located most, if not all, that have been exposed to the contagion. I am trying to

get the board of aldermen to pass an ordinance prohibiting all driving or leading of cattle through the public streets. I wrote Dr. McCormack, of the State Board of Health, to come here in person, which he did on Thursday evening, August 8. On Friday, at Dr. McCormack's request, a meeting was held at which resolutions were passed, so we can put all cattle that have been exposed (with the exception of Frisbie & Lake's) in two fields, on Mr. Handy's place, which is now in quarantine. This will necessitate some fencing that I will have done. We propose to put the infected and exposed ones in one field, and the sick or diseased ones in another. At the same meeting money was subscribed to pay the expense of those that were in quarantine until the 15th day of January, 1886. I have followed up most of the cases that have been exposed, and will so continue until all have been inspected. I followed one to Cincinnati that was shipped Saturday evening, August 9, from here, and saw her sold to a butcher and killed.

Frisbie & Lake have endeavored to keep the herd on the Cox place east of town as clear as possible by sending those that showed any symptoms of the disease over to Mr. J. K. Lake's, on the Falmouth pike, among those that are so badly diseased. There is no change in the cows belonging to M. Bridwell, J. S. Withers, and O. Slade, which are pastured in Rule & Maffitt's lot, adjoining J. K. Lake's. On August 14 I killed the bull Glory of Pleasant Hill, in the presence of Dr. McCormack, of the State Board of Health, and with J. K. Lake's permission. On examination before death the temperature was 103 2-5°, with dullness over the whole of the left side of the chest and complete loss of respiratory murmur, with a gurgling sound at each inspiration. On *post-mortem* I found the pleura adhered to the ribs and diaphragm, the pleura being three-quarters of an inch in thickness. On opening the pleura about 3 gallons of dark purulent liquid escaped and exposed the center of the lung that was in an advanced stage of infarction. The right lung and the anterior lobe of the left was in a comparatively healthy condition.

Respectfully, yours,

W. H. WRAY,
Veterinary Inspector.

Dr. D. E. SALMON,
Chief of Bureau of Animal Industry.

CYNTHIANA, KY., *October* 12, 1885.

SIR: Much progress has been made in stamping out pleuro-pneumonia during the past week by Frisbie & Lake killing all their sick animals. As they have made the start I think all others will follow. Among those condemned was Nutrina of Tunlaw. On examination she had a temperature of 100 2-5° Fahr., and small dullness over central portion of right lung. On *post-mortem* examination found adhesions to second, third, and fourth ribs on left side, and also second, third, fourth, fifth, and sixth, with a cyst 3 inches in diameter on right; membrane of cyst was very nearly one-half inch in thickness; adhesions on right side were very tenacious. The following is a list of those killed with Frisbie & Lake's herd: No. 22, Jessie Lawrence; No. 147, Fay St. Helier; No. 83, Duke's Emblem; No. 27, Hinwoor; No. 148, Lady St. Helier; No. 2, Rissa Cicero; 1 grade calf; 1 spotted heifer; No. 89, Pardon; bull Hannibal Duke; No. 88, Duke's Hadez; the Jos. Steven's cow; No. 92, Dora Willwood; No. 80, Countess Georgiana; No. 149, Flora St. Helier; grade spotted cow Camel; spotted heifer; 3 grade heifers; bull out of Dora Willwood; bull calf; calf out of Countess Georgiana, and Nutrina of Tunlaw.

Respectfully, yours,

W. H. WRAY,
Veterinary Inspector.

Dr. D. E. SALMON,
Chief of Bureau of Animal Industry.

CYNTHIANA, KY., *November* 16, 1885.

SIR: During my stay here I have found pleuro-pneumonia at the following places, viz: Frisbie & Lake's, W. T. Handy's, Rule & Maffitt's, M. Bridwell's, J. T. Withers', and T. J. Megibben's, at Cynthiana, on the places owned by W. T. Moreland and Irving Cox, at Indian Creek neighborhood, 3½ miles east of Cynthiana, and at D. N. Brannock's, near the Pendleton County line, 13 miles north of Cynthiana. The contagion was spread at Cynthiana in the body of a cow sold to Jos. Stevens by Frisbie & Lake, in the month of October, 1884, and not delivered until December 24, 1884, when she was taken to Mr. Handy's, where she remained three weeks. (Mr. Handy's stock became sick some time in February, 1885). She was then taken to Mr. Stevens' own place until she calved, which was about May 1, 1885. While at Mr. Stevens' place she came in contact with his mother's cow, which sickened and died about the middle of July. She was then taken to Rule & Maffitt's lot, and kept there until July 1, 1885, when she was taken back to Mr. J. K. Lake's, and pastured on the

race-course pasture. This cow had a cough and looked unthrifty all last winter and spring. On inspecting her August 13, 1885, I found her suffering with acute and chronic pleuro-pneumonia. D. N. Brannock's herd was bought at the auction sale held here on June 22. As there was no quarantine established at that time, and a great deal of driving and intermingling of cattle, I think they got the contagion from passing Rule & Maffitt's lot while on their way to Cynthiana to be sold. W. S. Moreland's cow was pastured next to Irving Cox at the Indian Creek neighborhood, Mr. Cox having taken his herd of 13 head, which had been pastured next to Frisbie & Lake's herd on the Cox pasture, to Indian Creek some time in June. T. J. Megibben's pasture was infected by a cow belonging to James Riche, which had been pastured in Rule & Maffitt's lot all the spring, and was taken to T. J. Megibbens' place some time in July. In August she was sold to a butcher in Cincinnati and killed.

Frisbie & Lake's whole herd was kept at J. K. Lake's home place during the winter of 1884-'85. They were turned out on pasture April 17, 1885, the healthiest in appearance going to the Cox pasture, 1½ miles east of Cynthiana. The milch cows were kept at the home place, and those that were sick or had shown any symptoms of being unthrifty were put on the race-course pasture. The 21 head that went to Tennessee were taken from Lake's home place some time during the winter. Frisbie & Lake have had 3 die since they have had the disease in their herds. As soon as they were convinced that there was no remedy for the disease and an animal showed symptoms of being sick it was killed and buried. Fourteen were thus destroyed, and these, with the 3 animals that died, make 17 head disposed of before August 1. On my arrival on August 4 there were 41 head on the Cox pasture, 17 head at the home place, 27 head on the race-course pasture, and 2 at H. D. Frisbie's house, making a total of 87 head. On October 7, 1885, I killed and buried 7 head from the Cox pasture; on August 14 I killed the bull Glory of Pleasant Hill; on August 17. 1 heifer died; on August 29 I killed 2 heifers, and on October 7 I killed 17 head from the race-course pasture; on October 8 I killed 2 animals from the home place. Frisbie & Lake had some cattle on a place of Mr. Lake's, 3½ miles from town, on the Cynthiana and Falmouth pike. I believe this is the herd that went to Texas. Mr. Lake sold this place last spring.

On W T. Handy's place were 21 head, 19 of which were Mr. Handy's, 1 of Mr. Woolwinder's, and 1 belonging to Mrs. Roberts. One heifer of Mr. Handy's died August 19, 1885. He has 9 head suffering with chronic pleuro-pneumonia. Mrs. Robert's cow has pleuro-pneumonia in a chronic form. Mr. Woolwinder's cow was sold to the butcher some time in October. In Rule & Maffitt's lot I found 7 head belonging to different owners, as follows: O. Slade, 1 cow (chronic form), killed October 20, 1885, J. N. Slade, 1 cow, got fast under the distillery and died; P. Barhart, 1 cow, sold to the butcher; J. W Lang, 1 cow, sold to the butcher; J. D Fuback, 1 cow suffering with acute pleuro-pneumonia, and was killed in the presence of W. H. Rose, D. V S., October 28, 1885; Marion Rule, 1 cow, sold to the butcher; T. J. Maffitt, 1 cow, killed August 22, 1885, had acute pleuro-pneumonia previous to my arrival. Several others that had been kept in the same field but had been taken home by their owners as follows: C. R. Kimbrough, 1 cow; Dr. Hedges, 1 cow; John Stevens, 1 cow; Mrs. Stevens, 1 cow, taken sick July 10 and died in about ten days; T. Brashears, 1 cow, was found suffering with acute pleuro-pneumonia and was killed in the lot about July 20. This lot is now empty, all the animals having died, been killed, or were disposed of to the butcher. J. S. Withers had 2 cows in his lot adjoining Rule & Maffitt's; 1 was killed October 10, she had chronic pleuro-pneumonia. The other is now suffering with acute pleuro-pneumonia and will likely be disposed of this week. M. Bridwell had 6 cows in his lot adjoining J. S. Withers, 3 of his own, 1 of J. T. Hedges, which was sold to M. Bridwell, and 2 of George Edsall's, which were killed by him and sold for beef. An animal belonging to M. Bridwell killed October 12, 1885, had chronic pleuro-pneumonia. A. Perrin has 1 cow in the distillery lot adjoining Rule & Maffitt's on the east. T. J. Megibben's lot contained 78 head, 3 of which were killed October 19, 1885, and found afflicted with chronic pleuro-pneumonia. W S. Moreland has 1 cow that was killed September 1, 1885, that had acute pleuro-pneumonia. Irving Cox has 13 head, 5 of which could only be inspected, as the balance were too wild to catch. Two of those inspected were found affected with chronic pleuro-pneumonia. D. N. Brannock had 17 head, 3 of which had chronic pleuro-pneumonia. The whole herd was killed and burned by a mob on the night of September 22, 1885.

If you desire the names of the 7 head affected in the chronic form in the herd that went to Tennessee I can get them and the herd register number for you.

Respectfully, yours,

W. H. WRAY,
Veterinary Inspector.

Dr. D. E. SALMON,
Chief of Bureau of Animal Industry.

CYNTHIANA, KY., *November* 30, 1885.

SIR: I inclose slip from the Covington *Commonwealth*, and copy of Mr. J. K. Lake's reply to the same, which he said you could send to the Associated Press if you desired. Mr. Lake seems now disposed to help us in our work. There are no new developments; neither do I look for many, owing to the cool weather I will go over Frisbie & Lake's herd again this week, and keep a close watch over all others.

Respectfully, yours,

W. H. WRAY,
Veterinary Inspector.

DR D. E. SALMON,
Chief of Bureau of Animal Industry.

The following is the letter referred to by Dr. Wray:

CYNTHIANA, KY., *November* 27, 1885.

DEAR SIR: An article dated Saint Louis, November 25, 1885, appeared in the *Commonwealth* last week purporting to give an account of a speech before the cattlemen by one Mr. Coy, of Chicago, in which he says the agitation of the pleuro-pneumonia question started on a mere rumor, and scouted the idea that there had been a single case of contagious pleuro-pneumonia west of the Alleghanies. The report further says that Mr. Coy favored all proper means taken to let the world know that the cattle of the West and Northwest were healthy. It is just such statements as the foregoing coming from men who do not know what they are talking about, that is retarding the progress of every effort aimed at the destruction of this great scourge, which is about to destroy the cattle industry of the United States.

If Mr. Coy will come to Kentucky and ship a few of the so-called pleuro-pneumonia cases into his herd, if he has one, he will soon change his tune. I have slaughtered 44 head of cattle which had this disease, besides have lost a number of others which died themselves of it.

Yours, respectfully,

J. K. LAKE.

EDITOR COVINGTON COMMONWEALTH,
Covington, Ky.

OUTBREAK OF PLEURO-PNEUMONIA IN MISSOURI.

While investigating the dissemination of the contagion from the infected herds in Illinois, I learned from the Messrs. Tripp that a young bull had been sent from their herd at Peoria to a lunatic asylum in Missouri, which they thought was located at Clinton. At the time of shipment the disease had just appeared among their cattle, but one or two had been affected, and they did not suspect the true nature of the malady. They had received information after the arrival of the animal in Missouri that it was in good health and apparently thriving. In order that I might be promptly informed, should any disease be conveyed by it, the following letter was addressed to the superintendent:

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., October 18, 1884.

SIR: Mr. Tripp, of Peoria, Ill., informs me that he sent you a bull calf in July of this year. At that time Mr. Tripp's herd was infected with contagious pleuro-pneumonia, though he was probably not aware of the fact when the calf was shipped. Will you have the kindness to write me as early as possible in regard to the condition of this animal's health since he was received, and in regard to the health of other cattle with which he has come in contact? The dangerous nature of this disease makes it very important that we should receive complete and reliable information in regard to all animals which have been sent from infected herds.

Hoping to hear from you soon, I am, very respectfully,

D. E. SALMON,
Chief of Bureau.

SUPERINTENDENT LUNATIC ASYLUM No. 1,
Clinton, Mo.

To this communication the following reply was received:

STATE LUNATIC ASYLUM, *Fulton, Mo., October* 25, 1884.

SIR: Yours of the 18th instant to the superintendent of this institution, directed to Clinton, Mo., has just been received by him here and handed to me for reply. The bull referred to was shipped from herd of the Messrs. Tripp, at Peoria, Ill., about July 10. As soon as he found his herd was infected he very promptly notified me. I at once separated the bull from the herd, and kept him apart from all other cattle until the 15th instant. He has been all the time and is *now* healthy and all right, as are all the cattle on our farm. Should the disease make its appearance in our herd will notify you at once. We are glad to know that your Department is looking so closely after this dangerous disease.

Very respectfully,

C. O. ATKINSON,
Steward.

Dr. D. E. SALMON,
Chief of Bureau of Animal Industry.

No further information was received in regard to this herd until late in February, 1885, when the following letter mentioning the existence of disease reached the Department:

STATE LUNATIC ASYLUM, *Fulton, Mo., February* 21, 1885.

SIR: On the 18th of October of last year you wrote making inquiry about the bull calf we purchased of the Messrs. Tripp, of Peoria, Ill. I replied at once, stating we had excluded the animal from contact with all other cattle; that his health was good, as was that of our entire herd. We kept him apart from all other cattle for one hundred days, though he was in the barn with our herd for the first ten days after we received him from Peoria. His health has been apparently good up to the present time. If at any time he has been ailing, it was so slight as to escape our notice.

Within the last three weeks a fatal malady has appeared among our dairy herd, the symptoms from the first being alarming and distressing. The cows attacked from the first breathe very rapidly and with much difficulty, mouth open, tongue protruded, frothy saliva—in some cases mingled with streaks of blood—streams from the mouth to the ground; legs and horns cold; tenderness along the spine; little or no appetite; restless, with neck extended and nose lowered; pulse about 84.

We have examined the lungs of the dead animals and find them more or less hepatized in every case. In two cases almost the entire lungs were in this condition; in one other partially so, and in one only the upper or smaller lobe of the right lung was in this condition. This last cow died very suddenly. She ate bran and chop at 4 o'clock in the morning. Soon after she was discovered to be breathing hard, and died at about 10 o'clock the same morning. The walls of the wind-pipe in this case were thickened until the air passage near the lungs was not large enough to admit my little finger.

We are greatly fearing contagious pleuro-pneumonia from the symptoms given. What is your opinion, and what would you advise?

Yours, respectfully,

C. O. ATKINSON,
Steward.

Dr. D. E. SALMON,
Washington, D. C.

P. S.—Do you think it possible the bull could have communicated the disease without having it himself?

C. O. A.

I replied to this letter as follows on the day of its receipt:

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., February 25, 1885.

SIR: Your favor of the 21st instant is just at hand, for which please accept thanks. I have just telegraphed Dr. Trumbower, an inspector of this Bureau, in whom I have much confidence, to visit you and make a thorough examination of your cattle. I think it possible that the bull referred to may have brought the disease, but I desire more positive evidence before reaching a conclusion.

Very respectfully,

D. E. SALMON,
Chief of Bureau.

Mr. C. O. ATKINSON,
Steward State Lunatic Asylum, Fulton, Mo.

A telegram from Dr. Trumbower, dated Mulberry, Ark., February 25, 1885, informed the Commissioner that he would start that evening for Fulton, Mo. On March 2 he telelegraphed from Fulton as follows:

Examination confirmed a strong suspicion of pleuro-pneumonia. One case assuming the acute type. Will wait for developments a few days, then make *post-mortem*.

After making this *post-mortem* examination, Dr. Trumbower telegraphed, as follows, on March 5:

Contagious pleuro-pneumonia among the cattle of the asylum farm positively ascertained by a *post-mortem* examination. One acute and 7 chronic cases remaining. A number of deaths with lung trouble reported near Mexico. Shall I investigate the latter report?

The following letters received from Dr. Trumbower give in detail the progress and results of his investigation:

FULTON, MO., *March* 3, 1885.

SIR: I have every reason to believe that pleuro-pneumonia exists among the cattle here, both from my own observation and in the history of the cases which died in February, as well as the condition in which the lungs were found on *post-mortem* examination by the attending physicians of the asylum. A number of the cattle remaining have the dry, single cough; hair looks rough; a few manifesting dullness on percussion, but not well marked. One cow is assuming the acute type. She was discovered to be sick on Sunday (the first); appeared very stiff in her gait; back arched; head extended, and cough painful. She was then in the field, and I did not make any physical examination. On the 2d instant, at 8 a. m., respiration was 44, and temperature 103°.2. Elbows were turned out; an occasional moan; disinclined to move. At noon she refused to eat. In the morning she yielded 1½ gallons of milk, and in the evening a half gallon. At 6 p. m. her temperature was 103°.2 and pulse 70. I discovered no well-marked dullness on percussion, but a slight dry crepitation in both lungs in the inferior portion of the chest.

* * * * * *

Dr. Smith and his assistants will give me any facilities for examination, and permission to kill any I may desire to slaughter. After destroying the acute case, if there is no mistake, and I don't think there can be, I then propose to kill some of the chronic cases, in which they have not discovered any sickness. It is hard for them to understand how the bull from Tripp's herd could have infected this herd after so long a time. By destroying a few of the chronic cases, I think I can satisfy them on that point. If any complications appear I will telegraph.

Hastily, yours,

M. R. TRUMBOWER,
Veterinary Inspector.

Dr. D. E. SALMON,
Chief Bureau of Animal Industry.

FULTON, MO., *March* 5, 1885.

SIR: I find the genuine contagious pleuro-pneumonia among the cattle here. Nine head died or have been killed since the middle of January and previous to my arrival. Dr. Smith gave me permission to destroy a cow yesterday, one which I discovered to be sick on the morning of the 3d. She had refused to eat her feed during the night, and yielded only half the usual quantity of milk. She registered a temperature of 105°.8; respiration, 36; dullness over the lower half of the left lung on percussion. On the 2d instant I had picked her out as a chronic case, together with 7 others, but the acute symptoms in this case appeared very suddenly. She had not been suspected of being diseased by the dairyman, and in fact looked better on the 2d instant than many of the other cattle in which I had failed to detect any evidences of disease. On the morning of the 4th the temperature was 105°; respiration, 38; a slight moan and rapid effusion in the chest going on. I requested permission to kill her, expecting to be able to show various stages of disease in the affected lung. Permission was granted, and in the afternoon, in the presence of Dr. Smith and his three assistant physicians, I made the autopsy. The left lung presented exactly the conditions which I had predicted, and I never before saw or expect to see a more beautifully marked case of the disease. The marbling was perfect, as were the interlobular exudation, infarction, organized lymph exudate in the thorax, and presented plain and conclusive evidence of the three stages of the disease. The witnesses were thoroughly convinced as to the nature of the disease.

To-day or to-morrow I expect a quorum of the managers of the asylum to be in attendance to witness a *post-mortem* on the cow which I found sick on Sunday—the acute case mentioned in my telegram of the 2d instant.

Yesterday I examined very carefully the bull purchased from Mr. Tripp, and found circumscribed dullness on the left side, over the center of the lung, and a dry, rubbing crepitation in the inferior part of the chest on the right side. I propose to kill him if the managers will allow it, in order to show them the origin of the infection. The isolation of the bull has not been perfect, and two of the cows served by him when he arrived here have died, and two others are now presenting symptoms of the chronic type. Six chronic and one acute case are now in the barn. The herd comprises 74 head, including calves, yearlings, bulls, and cows. I am urging the destruction of every animal on the place, and Dr. Smith favors my advice. But it is doubtful if the managers can appreciate the necessity of it. I telegraphed Professor Sanborn, requesting him to come here and see the cases, believing that I can interest him in the matter and secure his assistance in a speedy stamping out of the plague. Of the 30 cattle now confined in the asylum barn 20 have more or less cough. I think I will remain here and render all the assistance I can.

Yours to command,

M. R. TRUMBOWER,
Veterinary Inspector.

Hon. GEORGE B. LORING,
Commissioner of Agriculture.

I replied to this letter immediately upon its receipt as follows:

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., March 9, 1885.

SIR: Your favor of the 5th instant is at hand. Please remain at Fulton until you receive further instructions from me.

You will please gather material for a full report in regard to the outbreak at Fulton, stating the time when the first symptoms of the disease were noticed with each animal as near as possible, and any other points which you may be able to learn in addition to those already furnished. Does the herd consist of thoroughbred Jerseys alone, or is it a mixed herd?

Very respectfully,

D. E. SALMON,
Chief of Bureau.

Dr. M. R. TRUMBOWER,
Fulton, Mo.

The letters which follow continue the history of this outbreak, and need no explanation:

FULTON, Mo., *March* 7, 1885.

SIR: Yesterday I killed two of the diseased animals before five of the board of managers of the State Lunatic Asylum. They were very skeptical about the disease. One of them (Dr. Howard) thought it could not be anything more than ordinary pneumonia brought on by exposure. I first killed the acute case, which was discovered on the 1st instant. The anterior and central portion of the lung were extensively hepatized, but the greater part of free borders of the posterior lobes were healthy, consequently it made a very puzzling case for the physicians who used auscultation and percussion, as the only dullness to be discovered existed very close to the scapula and over the central part of the lung, while auscultation revealed no marked abnormal murmur to an inexperienced ear.

This case alone was satisfactory evidence to them. I pointed out the difference of lobar pneumonia in contradistinction to sporadic pneumonia. The various stages of the disease as shown in this case were as beautifully marked as in any case ever seen by me. But I had a surprise in store for them. I had chosen an old chronic case which plainly manifested extensive pleuritic adhesions and hepatization, including all of the left lung which could be reached by auscultation. I made a special point in calling attention to the fact that this cow's pulse was normal and regular in beat; temperature, 101°; respiration, 14; ate well, looked bright, and apparently suffered no pain or distress, and had but very little cough. In driving her down to the burial lot, a distance of one-fourth of a mile, she did not cough once, and several remarked that nothing could be wrong with that cow, as she was running along and felt playful. When she was dead, before opening the chest, I described to them the condition I expected to find. Examination confirmed my diagnosis to the very letter, as follows: Very strong pleuritic adhesions of the posterior lobe of the left lung to the ribs, the attachment being so strong that I had to dissect away the lung from the ribs. The whole surface lying against the diaphragm was so firmly blended with the latter organ by the connection of fibrous bands that it was difficult even to make the dissection without cutting into the one or the other of the two communicating organs. Two-thirds or more of the posterior lobe was impermeable to air, and presented that full round ap-

pearance denoting an abcess or cyst. On the removal of the lung I found that the only portion affected was that portion just described. I made an incision into the swollen part and laid open a sac at least 12 inches in length by 6 inches wide in the center. The contents were partly broken down necrosed lung, portions of it being yet of that brown color showing the marbled appearance and the occluded vessels and bronchi. I pointed out that this case was several weeks old, as shown by the strong adhesions and by the condition of the encysted lung; that it might possibly be of six months' standing, and had she been discovered at the time of her illness would most assuredly have been pointed out as a recovered case; that this was *one of the much-to-be-dreaded recoveries*, one which might for months and years scatter destruction among cattle, and at the same time be passed by as one of the healthiest and best cows in the stable.

At the conclusion of this examination all present were most strongly impressed with the necessity of instituting prompt measures for the destruction of the whole herd. Professor Sanborn, dean of the agricultural department of the State University, was present. I had telegraphed him at Jefferson City, and at the time my telegram reached him he was working with the committee on a veterinary sanitary law. He telegraphed to urge the immediate introduction of the bill.

Out of the 26 cows in the barn there are not now more than 4 which do not show evidence of disease. There are three more cases like the last one examined yesterday, and many more showing like conditions only on a smaller scale. One acute case appeared last night. I don't think she has been affected previously. It is now assuming the state of acute broncho-pneumonia. Temperature, 104.2°.

I want to kill the Illinois bull and one of the cows he served the day after his arrival here. The latter has encysted lung in her chest, and I feel almost positive that the anterior portion of the lung will show evidences of disease in the bull. I want to trace the full connection to the infected purchase. It is quite a stumbling block for people to see how it could be that the disease did not make its appearance sooner if the bull brought the contagion, as it was seven months before any death occurred.

The reported lung disease at Mexico is probably a false alarm, and I will not go up unless it should be in my way. Two sick cows are reported in this town, and I will see them to-day.

Yours, truly,

M. R. TRUMBOWER,
Veterinary Inspector.

Dr. D. E. SALMON,
Chief of Bureau of Animal Industry.

FULTON, MO., *March* 10, 1885.

SIR: I have this day made two more *post-mortem* examinations to demonstrate to a special legislative committee the nature of the disease. One of the cases was a four-year-old bull, which was apparently in perfect health; temperature, normal (99); respiration, 15; sleek in coat and in excellent condition; had never missed a feed, nor was he suspected of disease. I made a close examination of him yesterday, and found his right lung hepatized. On examination the right lung (posterior lobe) contained a cyst inclosing necrosed lung, partially liquefied, to the extent of several pounds in weight. The lung was firmly adherent to the ribs and diaphragm by strong fibrous tissue. The second animal was one which had been served by the Tripp bull on the 28th of July. She was emaciated and her chest was abnormally resonant on percussion. I suspected the anterior part of the lung affected, as she had a harassing cough. (She suffered an abortion on the 28th of last month.) The anterior part of right lung contained encysted dead lung 4 by 6 inches, with a sac at least three-eighths of an inch in thickness. The diseased parts were firmly adherent to chest wall and pericardium.

The legislative committee contained two physicians. The majority of them were skeptical about the previous diagnosis, but when they saw the condition of these two cases they seemed thoroughly convinced, and did not care to see the third case which I had in waiting.

Yesterday I killed a cow to demonstrate to Representative N. D. Thurmond, of this district, the nature of the malady. She also was an old recovered case. There were adhesions and hepatized lung embracing two-thirds of the posterior lobe of the left lung, plainly showing three invasions of the disease. She had not been known to have been sick until the 6th instant, when I discovered the disease on auscultation. Her temperature then was 105°.2, but she ate her feed up to the time of her death. The right lung showed red hepatization in the early stages, appearing in isolated lobules distributed throughout the lung. Mr. Thurmond was satisfied. He also had been skeptical about it, but was convinced after seeing this case.

Many of the town cows have been, more or less, exposed to this herd, and I found one cow yesterday which manifests plain evidences of the disease. I examined another one this evening, but there was so much noise in the neighborhood that I could not make a positive diagnosis, and will examine her again in the morning. I believe, however, she is diseased.

The excitement is beginning to run high. The committee thought they might want me at Jefferson City.

Out of the 25 head of milch cows left in the barn, not more than 5 are free from disease, and I would very much like to remain until the State takes action and orders them killed, which it no doubt will do, for I think a clinical record of these cases will furnish one of the most instructive histories ever found in this country. The latency of the disease for several months, the great percentage of infected animals, and the extensive amount of lung substance involved and destroyed, will go far to show the great danger of quarantining an infected herd for three months after the last death.

I have been most urgently insisting on the absolute necessity of killing the whole herd here in order to stamp out the disease at once, stating that it is the only safe measure, and one which will restore immediate confidence to the surrounding community and States, and in the end be by far the most economical measure for both the county and State. This is one of the great cattle counties of the State, and several parties near the town are feeding for the spring sale from 200 to 400 head.

Yours to command,

M. R. TRUMBOWER,
Veterinary Inspector.

Dr. D. E. SALMON,
Chief of Bureau of Animal Industry.

The fact of the existence of lung plague in the herd belonging to the asylum having been fully established, much uneasiness was felt by the people of Callaway and surrounding counties lest it might spread to other herds and localities. That they might have the aid and assistance of the Government in their efforts to suppress it, the Commissioner of Agriculture was urgently requested to permit Dr. Trumbower to remain and superintend the necessary measures for its extirpation. Senators Cockerell and Vest were also earnestly appealed to, and requested to urge upon the Commissioner the importance of lending all the aid in his power. Among others who signed these appeals were the following-named citizens of Callaway County: Dr. T. R. H. Smith, superintendent and physician State Lunatic Asylum; Charles A. Bailey, William Harrison, John A. Hockaday, J. L. Erwin; B. P. Bailey, treasurer State Lunatic Asylum; F. Lorenz, W. H. Dawson, J. H. Buchanan, and John R. Carter, members of city council of Fulton; J. B. Snell, mayor of Fulton; T. A. Baulwave, city attorney; John McGregor, councilman; W. L. Fisher, J. C. Yantis, and Edwin Card, members State Lunatic Asylum board; George McIntire, city marshal of Fulton.

The following letter was forwarded to Dr. Trumbower:

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., March 18, 1885.

SIR: I would urge upon you the importance of a thorough examination into the *history* and *character* of the disease among the cattle at the lunatic asylum at Fulton. I trust you will be able to give an accurate report on the origin, time of incubation, and the pathology of the cases; and I wish you to remain at Fulton until after these points are thoroughly investigated and you are fully satisfied that the disease has been extirpated and all danger is over.

Yours, respectfully,

GEO. B. LORING,
Commissioner of Agriculture.

Dr. M. R. TRUMBOWER,
Fulton, Mo.

The following additional letters were received from Dr. Trumbower about this time:

FULTON, MO., *March* 19, 1885.

SIR: A recently appointed board of managers of the asylum met for the first time yesterday. After transacting the regular business they called on me to advise them what to do with the cattle. I killed 1 cow to show to four of the physicians on the

board wherein this disease differed from sporadic or broncho-pneumonia. The animal I had chosen was an excellent subject, and I had no trouble of convincing them of the necessity for action. They proposed that, in order to divide the responsibility of diagnosis, and to overcome any prejudice that may exist, to call in one of the most able and well known veterinarians in the United States, and one who has no connection with Government or State service. I recommended Dr. Gadsden, and they telegraphed him last night.

Seventeen head of the diseased animals are now dead. I strongly suspicion several old cases among town cows, but will not make any positive diagnosis until these cows are disposed of and action taken to confine the town cows.

Yours, &c.,

M. R. TRUMBOWER,
Veterinary Inspector.

Dr. D. E. SALMON,
Chief of Bureau of Animal Industry.

FULTON, MO., *March* 23, 1885.

SIR: The following preamble and resolutions were passed by the new board of managers of the State Lunatic Asylum:

"Whereas a destructive disease is prevailing in the herd of cattle belonging to the institution, some 16 or 17 having died already, and as many more showing symptoms of the disease; and

"Whereas a United States veterinary surgeon, Dr. M. R. Trumbower, has been for two or three weeks making full and thorough examination of said herd, and from these investigations and *post-mortem* examinations (one of which was made in the presence of the board) he unhesitatingly pronounces the disease to be the contagious pleuro-pneumonia; and

"Whereas said Trumbower declares the idea of quarantining an inefficient and uncertain remedy for the evil, having been tried and found unsuccessful after fifteen or eighteen months rigid enforcement; and

"Whereas the cattle interests of our State demand the stamping out of the disease:

"*Resolved*, That the superintendent be, and is hereby, instructed to kill the entire herd of cattle as soon as he is in possession of an opinion from the State attorney-general that such an order is within the legal power of this board, and as soon as the diagnosis of Dr. Trumbower will have been confirmed by some other eminent authority."

As stated in a previous letter Dr. Gadsden could not come, and I advised the employment of Dr. Hagyard.

Capt. J. H. Payne, of the Kansas City stock-yards; Mr. Matthews, of Kansas City, an importer of Galloway cattle; C. M. Lackland, of Mexico, Mo., accompanied by veterinarians Adair and Dundas, of Kansas City; and Dr. Bates, of Bates City, arrived here yesterday for the purpose of making an examination of the asylum herd. Messrs. Payne and Matthews were skeptical, and doubted the existence of pleuro-pneumonia in this herd. They were of the opinion that the disease was tuberculosis. Mr. Matthews wanted the Tripp bull killed in order to show whether it was possible for him to have brought the disease here. This request I declined because I first desired to show them from some other animal that pleuro-pneumonia existed in this herd, and I wanted to reserve this bull until the arrival of Dr. Hagyard to show the connecting link or source of infection. To this they readily assented. After a description of the disease on the part of myself and the accompanying veterinarians, 2 animals were selected for slaughter, one an old case and the other of more recent origin. The case of most recent origin was first killed, when a most marked condition of the disease was revealed. When I laid open the lung, after breaking the attachments to the chest wall and diaphragm, the characteristic marbled appearance was presented, and Mr. Matthews said: "That is the exact condition you described, and if you described the disease of pleuro-pneumonia, and you all seemed to agree, then this cow has it." This case was satisfactory to them, and I did not slaughter the old case.

Messrs. Payne, Matthews, and Lackland returned home in the evening. The veterinarians and Mr. Powell, reporter for the Kansas City Record, remained to meet Dr. Hagyard, who arrived later in the evening.

Sunday morning we killed the Tripp bull. On the left side, adhesion by long fibrous bands suspended the posterior lobe from the inferior surface of the spinal column or ribs; above the heart in the anterior lobe four small cysts were discovered containing caseous matter. The largest one still showed some *débris* of the fibrous organization. This settled the origin of the disease in the herd and its introduction from Illinois. We then examined the old case, and found a very large cyst inclosing necrosed lung, which was bathed in a thin liquor. Considerable progress in liquefaction had taken place. The third cow contained a smaller cyst not quite so old as in

the former case. Dr. Hagyard had no hesitation in declaring the disease contagious pleuro-pneumonia, and the other veterinarians were equally as positive.

I expect the remainder of the herd will be slaughtered this week, and then I want to make a thorough and complete investigation of all the cattle which have in any way been exposed to contamination. I am satisfied that several of the neighboring cows are affected, but I do not want to say much about it until the matter is settled here. I propose to continue to urgently insist upon the prompt destruction of any herd in which the disease appears, and of all cases manifesting any markedly suspicious symptoms among the town cows. Fifty or more town cows have been exposed daily for several months during the fall, and other cattle have broken into the field containing the asylum herd. By vigorous work I believe the disease can be effectually eradicated in this State, and I will work hard to accomplish that end. I should like to see an example made of the State of Missouri in order to show what can be done to save the great cattle interests of the West from utter ruin. The three months' quarantine business is a delusion and a humbug. No stronger evidence can be produced than that which is existing right here to prove the utter fallacy of relying upon the destruction of the sick and the quarantining of the apparently healthy for the eradication of lung plague.

Yours, respectfully,

M. R. TRUMBOWER,
Veterinary Inspector.

Dr. D. E. SALMON,
Chief of Bureau of Animal Industry.

FULTON, MO., *March* 28, 1885.

SIR: I went to Mexico, Audrain County, on the 26th instant, on account of a report that two herds there were affected, that four animals had died, and on *post-mortem* examination showed lesions of contagious pleuro-pneumonia. I found the report a canard, as there was no cause whatever existing for the rumor. On my return yesterday I found Dr. Holcombe awaiting my arrival, and in the afternoon we killed 27 of the asylum herd, and only found 3 which did not show evidences of lung affection; many of them had encysted dead lung. Ten were calves, nearly a year old; the balance were cows. This afternoon we will kill the very young calves and about 20 2-year-old heifers—altogether about 30 head. I desire to retain six head for exhibition at a meeting which is called by the cattlemen of the State to take place here on the 31st instant. I want them to raise money sufficient to pay for all exposed and infected cattle. Eighteen head on an adjoining farm show evidences of the disease, and probably 75 others have been exposed. The legislature has passed a bill which I fear will be no guarantee of safety even if carried out to the letter.

Governor Marmaduke desires me to come to the capital as soon as the diseased asylum cattle are disposed of. I will go to see him the latter part of next week.

Yours, truly,

M. R. TRUMBOWER,
Veterinary Inspector.

Dr. D. E. SALMON,
Chief of Bureau of Animal Industry.

Owing to the slaughter of the asylum herd and the enactment of a law under which a State veterinarian could be appointed, it was now thought that the matter could be safely left with the State authorities, and the following letter was addressed to Dr. Trumbower:

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., April 2, 1885.

SIR: I have received your letters in regard to the Fulton outbreak, and am pleased with the way you have managed it as far as any information which I have received up to this time goes. I desire that you shall make an inspection of the exposed cattle as soon as possible and get the matter in a condition to leave in the course of the next ten days. We have pressing work in Nebraska which I should like for you to take in charge. If necessary, you might return for a few days at a time to Fulton and watch the disease there as long as necessary. I am anxious to get a full and detailed report in regard to the disease at Fulton at as early a day as possible.

Very respectfully,

D. E. SALMON,
Chief of Bureau.

Dr. M. R. TRUMBOWER,
Fulton, Mo.

The following telegram, signed by Governor Marmaduke and the Hon. R. P. Bland, indicated that the trouble was more serious than I had supposed:

JEFFERSON CITY, MO., *April* 4, 1885.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture, Washington, D. C.:

Your attention is respectfully invited to the fact that in the county of Callaway, this State, pleuro-pneumonia exists in a dangerous form, affecting several herds of cattle and liable to spread and affect other herds, to the great damage of the citizens thereof. It is therefore earnestly requested that whatever powers you may have under the laws of Congress, and particularly the act of Congress of May 29, 1884, be exercised by you in the manner contemplated by said act in the suppression of said disease, and to use such appropriation and means as may be authorized by such act in this behalf. Immediate and vigorous action is requested. We have visited the locality affected, and can certify to the facts above stated. Over 100 head of diseased cattle have been killed, and in the opinion of the veterinary surgeon (Dr. Trumbower), now on the ground by the authority of your Department, many others are believed to be affected. The citizens of the county are doing their whole duty in contributing their money and time in the effort to stamp out the disease. Dr. Trumbower has given valuable aid by his skill and experience in the detection and suppression of the disease, and any further aid your Department can render in aid of the efforts of the people of the country will be of great value to them and the State. The State authorities will use all the limited powers given them to co-operate in stamping out the plague.

JOHN S. MARMADUKE.
R. P. BLAND.

Dr. Trumbower's reply, given below, confirmed this view and led to his retention at Fulton:

FULTON, MO., *April* 5, 1885.

SIR: I received yours of the 2d instant, and am inclined to think it would be a great mistake for me to leave Fulton now. We have just begun to take active measures for the discovery and destruction of all infected herds, and do not yet know the full extent of its spread. We destroyed the last of the asylum herd on the 31st ultimo. The whole herd numbered 85 head, including all that died previous to my arrival. Seventy-three out of the 85 showed plain evidences of the disease at the *post-mortem* examinations. I examined each lung and took notes of the appearances. On the 1st instant we killed 18 head, owned by A. J. Owens. These cattle had been grazing in an adjoining field and had broken through the dividing fence, and had mingled with the asylum herd at various times. Governor Marmaduke was present at the slaughter of these. I examined the lungs of 6, all of which presented evidences of the disease. I intended to examine each one, but it commenced to rain and I had to leave the rest.

Mr. Owens sold several of his cattle to other parties. I examined 4 on one place and found them showing slight evidences of disease. They were killed, and the remaining animals were quarantined by the owner. One other I killed yesterday for examination, to which 100 head had been exposed. This one manifested such slight evidences—collapse of a few lobules and slight thickening of the pleura on the posterior wing of the lung—that I could hardly believe that it had contaminated others. To-morrow morning I will kill 3 more from the same herd, to which 20 have been exposed. One calf purchased from the asylum herd died on the 1st of March near Cedar City. I examined 5 which were in the same lot with the calf, and found evidence of lung disease in 2 of them. We will kill 3 this week; and if they show plain evidences, about 15 others which have had a chance of infection, 1 of which was moved to Bakersville, ought to be killed. We have estimated that nearly 800 head have been more or less exposed to infected herds. From the newspaper cuttings, which I mail, you will see what action is being taken for the stamping out, and men are now out collecting money. It is believed that $20,000 will be necessary to buy the infected herds.

A cow which was served by one of the asylum bulls was taken to Mexico. Another one, which had been running with some of the infected town cows of Fulton, was also taken to Mexico. I am requested to go there to-morrow to examine these cattle and exposed herds and attend a cattleman's convention.

The only question now is whether or not a sufficient amount of money can be raised. If you will allow me to remain here and undertake this work it will probably necessitate my staying for six months or longer, and I may require assistance for a time. I am in hopes that Commissioner Colman will be at Mexico at the meeting to-morrow, as I would like to have a personal talk with him. If he does not attend, several of the cattlemen here think I should accompany them to Saint Louis for

the purpose of laying this matter before him, and to urge him to make a special effort to extirpate this outbreak in his own State.

I accompanied the governor to Jefferson City last week at his urgent request. He fully appreciates the great calamity hanging over the cattle industry of this State, but feels powerless at present to do anything to remove it.

Yours to command,

M. R. TRUMBOWER,
Veterinary Inspector.

Dr. D. E. SALMON,
Chief of Bureau of Animal Industry.

The following notice was sent to the president of the Chicago and Alton Railroad Company:

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., April 6, 1885.

SIR: Under section 7 of the act establishing the Bureau of Animal Industry it is my duty to notify you that the contagious pleuro-pneumonia of cattle exists at Fulton, Mo., and in that vicinity, and that to receive any cattle affected with this disease for shipment will render your company liable to the penalty prescribed in said act, a copy of which is inclosed for your information and guidance.

Very respectfully,

E. A. CARMAN,
Acting Commissioner.

T. B. BLACKSTONE, Esq.,
President Chicago and Alton Railroad, Chicago, Ill.

The following communications need no explanation:

JEFFERSON CITY, MO., *April* 8, 1885.

Dr. D. E. SALMON,
Chief of Bureau of Animal Industry:

Send immediately veterinary inspector to confer with Dr. Trumbower, of Fulton, Mo., and to make inspections of cattle at Kansas City.

NORMAN J. COLMAN.

KANSAS CITY, MO., *April* 9, 1885.

SIR: I herewith inclose you a copy of our annual report for the past year. At our meeting yesterday with yourself and Governor Marmaduke, our committee stated that "we shipped yearly from these yards into Kansas, Nebraska, Colorado, and the Territories from 20,000 to 30,000 head of cattle." These figures were an estimate we were forced to make, as I had omitted taking with me a copy of our report. Upon my return I find our guess to have been so far short of the facts that I briefly sum them up that you may the more fully realize the real importance of continuous and thorough inspection at these yards upon all cattle that may by any possible chance tend to spread the present scourge of Callaway County.

Our receipts for the year were 533,526 head, of which I estimate Missouri sent as follows:

Via. Hannibal and Saint Jo Railroad	3,000
Via. Wabash, Saint Louis and Pacific Railway	3,500
Via. Missouri Pacific Railway	3,500
Via. Kansas City, Saint Joseph and Council Bluffs Railway	2,000
Via. Chicago and Alton Railway	4,000
Via. Chicago, Rock Island and Pacific Railway	2,000
Driven into the yards	7,000
Total	25,000

Our shipments during the same period aggregated 533,992, of which the States north and west of us received by various roads as follows:

Missouri Pacific Railway (estimated)	3,000
Union Pacific Railway	16,739
Southern Kansas Railway	8,244
Fort Scott and Gulf Railway	7,303
Kansas City, Saint Jo and Council Bluffs Railway (estimated)	4,000
Atchison, Topeka and Santa Fé Railway	20,443
Driven out of yards	1,000
Total	**60,729**

Here are over 60,000 cattle shipped into the States which have already, or may quarantine against us, and all drawn from those States named in the Colorado quarantine proclamation, except, perhaps, 10,000 that may have come from the West and gone back again in other hands to feed. The magnitude of these figures will, I am sure, satisfy you of the importance of having an inspector of the highest degree of capability and integrity permanently located at these yards.

Very truly, yours,

H. P. CHILDS, *Superintendent.*

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture.

On April 10, Dr. C. B. Michener, of New York, was directed by telegraph to proceed at once to Fulton, Mo., and assist Dr. Trumbower. It was hoped that by a rigid supervision and isolation of the cattle in that vicinity there would be no necessity of inspectors at other points, and that neighboring States could be induced to allow unrestricted shipments of animals from the counties that had not been infected.

The condition of affairs on April 19 is summarized in the following communication from Dr. Trumbower, and in the notice and report of the citizens' executive committee given below:

FULTON, MO., *April* 19, 1885.

SIR: One hundred and thirty-nine head of cattle, including the asylum herd, have been killed. About 300 more, which are now known to have been directly exposed, should be killed. From 500 to 800 others, which have had opportunities for exposure, remain; they have not yet been examined. All the money raised for the purchase of infected herds has been expended.

We are still sanguine of success. Two conditions exist which are favorable, viz: The slow extension of the disease, considering the opportunities afforded; the evidently mild and subacute or chronic type of the outbreak.

Yours, truly,

M. R. TRUMBOWER,
Veterinary Inspector.

Dr. D. E. SALMON,
Chief of Bureau of Animal Industry.

To the people of Callaway County:

It is a well-established fact that contagious pleuro-pneumonia is now prevailing to an alarming extent in this county. The executive committee have already discovered that near 1,000 head of cattle in this county alone, have been exposed to the disease.

It is known that at least sixty different persons, scattered over the county, have had their cattle exposed, and how much further it may have extended it is impossible to say until further examination is made. Every day's work of the committee increases the number of exposures. Nor are the contaminated herds confined to Fulton and immediate vicinity. The farther from Fulton the greater the number of exposed herds.

The disease *can* and *must* be stamped out at any cost. There is no time now to wait to see what your neighbor will do. Business in our county is dead. Our cattle are quarantined in the county. How long shall this stagnation of business remain? When will you be able to ship your cattle to market? There is but one answer—whenever you can say to the world pleuro-pneumonia no longer exists. What class of men will this disease most affect? There is but one answer—the men who own the greatest number of cattle. Why stop to argue the question that our merchants, our doctors, our lawyers, our smiths, and other mechanics, are as much affected as the cattlemen? You know the cattlemen are vitally interested, and to the cattlemen we appeal to take steps to protect themselves.

It is useless, it is suicidal, for the people of Callaway to remain idle and expect other counties to do for them what they will not do for themselves. Whenever our people will show to the world that they realize the importance of this calamity by putting up money to suppress it, then will other counties come to your help, and not till then. Callaway County has over $1,000,000 worth of cattle, nearly every dollar of which is liable to be lost. If your dwelling-house, worth $1,000, was on fire, would you not give $100 to save it? How much have the people given to save the $1,000,000 exposed? Not $3,000—not one-third of 1 per cent.

Will you see your house burn to the ground because your neighbor won't come and help you put out the fire? That is what the cattlemen, the business men, all

men of the county are doing—waiting for their neighbors to save their property. "But," you say, "why don't the governor call the legislature together and get the State to help us?" Is the State more interested in saving your property than you are? No one has a right to ask for help until he has tried to help himself. If Callaway County will subscribe $15,000 to stamp out pleuro-pneumonia, we have no doubt but an equal amount will be furnished outside the county. One man in Kansas City has already offered to give one-tenth of the whole cost, not exceeding $50,000.

What will you do? Go to work, every man of you. See your neighbor; get him to subscribe something.

In order to secure concert of action and to effect a more thorough organization and to devise plans for raising money, we hereby call upon the tax-payers of Callaway County—the cattle-men, the mule-men, the mechanics, the merchants, the doctors, the lawyers, and every other class or profession, to meet at Fulton on Saturday, April the 25th, 1885. Come one, come all; come to do something, If you will come in the right spirit, our word for it, in thirty days every cow in the county that has been exposed to pleuro-pneumonia will be in her grave. Ask your neighbor to come.

J. D. HENDERSON, *County Clerk*,
N. D. THURMOND, *Representative*,
JOHN A. MOORE, *Treasurer*,
Finance Committee for Callaway County.
C. A. BAILEY,
JOHN L. ERWIN,
SISERA THRELKELD,
Executive Committee.

PROGRESS OF PLEURO-PNEUMONIA.

To his excellency John S. Marmaduke, governor of Missouri:

The undersigned executive committee, appointed March 31, at a meeting of cattlemen in Fulton to take steps to suppress the disease of pleuro-pneumonia among the cattle of Callaway County, submit the following statement of facts showing the extent of the disease and the rapidity with which it is spreading: The disease, so far as investigated, has been found to have originated with the asylum cattle. The asylum bought a bull last July of Mr. Tripp, near Peoria, Ill. This bull ran with the asylum herd of about 85 cattle until the herd was slaughtered in March. Of the 85 asylum cattle killed, all except 9 were found to be diseased, some slightly and others indicating that the disease was of several months' duration. The spread of the disease outside of the asylum herd can be traced almost entirely to cattle formerly owned by Isaac Owen and John Lawther, each of whose farms adjoins the asylum lands on the east, there being only a fence between the asylum pastures and these farms.

Mr. Owen owned 28 head of cattle since the appearance of the disease at the asylum, or rather since the Illinois bull was taken there. Of these he sold to W. F. Nesbit, 3 miles south of Fulton, 4 head, which were placed with 14 other cattle of Mr. Nesbit's. The 4 head have been all killed, and 3 of them found to be affected with the disease. There has been no chance, as far as we learn, for the disease to spread to other cattle from Nesbit's herd, except to the cattle on the county farm. Nesbit's cattle at one time were on a farm adjoining the county farm, which has 18 head.

Mr. Owen sold Mr. Gallagher, 8 miles east of Fulton, 3 head, which were placed with 12 others of Gallagher's cattle. The 3 purchased of Mr. Owen were examined and found diseased. All of Gallagher's 15 head have been killed.

The following cattle have been exposed to Gallagher's—all in the immediate neighborhood: Frank Smith, 5 head; Christopher, 2 head; Willis Dearing, number not known; Calicote, 2 head; James B. Head, 2 head; Glover, 1 head; Garrett, 6 head; Lawrence, 7 head; Sigman, 8 head. Mr. Lawrence's cattle have been running out, and we cannot tell how many they may have come in contact with. Nor is it yet known that any cattle that have been exposed to Gallager's have the disease, as it is yet too early to tell.

Mr. Owen sold to Jack Muir, 5 miles north of Fulton, 3 head, which were put with 11 head of Muir's cattle, 14 head of Cook & Houff's, and 7 head of I. H. Dunham's. The 3 purchased of Owen were killed and all found diseased. The rest of Owen's herd, 18 in number, have been killed; and 6 of them examined after they were killed, were all diseased.

Mr. Ballinger, a neighbor of Mr. Owen, had 2 cows that were with Mr. Owen's cattle about Christmas. They have been examined, but there could be found no indications of the disease yet.

J. L. Erwin bought a cow of Mr. Owen September 1; she was placed with Erwin's herd of about 140; was killed some time since and found not diseased.

I. H. Dunham's farm adjoins Mr. Owen's on the east. Mr. Dunham had 13 head exposed to Owen's herd, and 5 of Mr. Dunham's cattle have, upon examination, been found diseased.

Frank Massey has 2 cows and Louis Strambough 4 head that have been exposed to the Dunham cattle. Mosby, Wills, and Berry have 13 head exposed to Dunham's and 2 diseased. Monroe White has 1 cow that has been running with Mr. Owen's cattle. Mr. Freiberger 10 or 12 head that have been running with Mr. White's cattle. Louis Baker has 16 head that have been running with Freiberger's.

The above gives the number found to be diseased and exposed to the disease through Mr. Owen's herd.

John Lawther was trading extensively in cattle last fall and summer and also during the winter. Yet it is not known how many cattle he had on his place that have been exposed to the asylum herd. He sold a cow to Mr. Gross, in Fulton, probably in February or March. This cow was examined by Dr. Trumbower and he pronounced her diseased. She was killed and found diseased. While Mr. Gross had her she was in a lot adjoining a lot that W. B. Tucker kept several head in. The town cows running on the streets could also come in contact with her.

Mr. Lawther sold 1 cow to Mr. Herckenrath, in Fulton. So far, no indications of disease. He also sold 1 cow to J. L. Erwin, 1 mile north of Fulton, on February 3. She was examined by Dr. Trumbower on the 14th instant, and pronounced diseased. She was killed on the 17th and found badly diseased. This cow was with Mr. Erwin's herd of about 140, mostly milk cows.

The cow bought of Lawther had a young calf which Mr. Erwin placed with his own calves, 22 of which were sold to Jerry Muir on March 4. Muir sold the Erwin calves to Tyler.

Mr. Lawther sold to Cook & Houf, 5 miles north of Fulton, 14 head, which were put with their other cattle, 50 or 60 in number. They sold some of the Lawther cattle to the asylum for beef. Several were shipped to Saint Louis, 1 sold to George Craig in the neighborhood; 2 to Jerry Muir, also in the same neighborhood. The one sold to Craig has been killed and found diseased, and 15 head still in Cook & Houf's possession that were exposed have been condemned and will be killed. The one sold to George Craig came in contact with 4 others and was in a field adjoining 40 others. Cook & Houf sold 1 of the Lawther cows to George Gilmore, 7 miles north of Fulton.

Lawther sold 42 head to Davis & Co., which were wintered since January on T. R. and W. T. Brook's farm, 7 miles west of Fulton. J. R. Baker, 12 miles northwest of Fulton, bought 25 head of these cattle. Lawther also sold to Stephen Pugh, 5 miles northeast of Fulton, about January 1, 12 head, now on Pugh's farm with about 20 others.

Lawther sold to Hood, in Audrain County, 15 head. Hood lives 7 miles south of Mexico. Lawther said the Hood cattle had the same chance to contract the disease as others of his cattle that had been found diseased.

Petrie adjoins the asylum; he had 8 head killed and all were found diseased.

Shadrick adjoins Petrie; has 1 cow; been examined, but no disease discovered as yet.

Kirk adjoins Petrie; has 5 head, but no indications of disease.

Debo adjoins the asylum, and has 2 cows; examined and found diseased. Velte adjoins asylum and Debo's place; has 6 head, 1 found diseased.

James Wood has 1 cow that had access to the pasture where the Illinois bull was kept, and was bred to this bull. Examined, but no indications of disease found.

Henry Nichols has 1 cow pastured in lot adjoining the Illinois bull lot. Examined and no trace of disease found.

Jeff. Williamson has 18 head pastured in lot adjoining the asylum pasture. Examined and indications of disease found. Mr. Williamson sold to T. D. Brooks last fall 3 calves. Brooks lives 7 miles southwest of Fulton.

Milton Finley has 1 cow; ran on commons and was exposed to the Illinois bull. Not examined.

Mrs. Bush, 1 cow, exposed as above. Not examined.

Dick Davis, south of Fulton, had a steer that jumped in with asylum herd; now with W. F. Nesbit's herd.

W. B. Tucker, in Fulton, has 6 head that have been with asylum cattle.

Henry Kibby, 1 cow running on commons about town, supposed for some time to have been diseased. Killed a few days since and found to have been diseased and presented a case of recovery.

E. M. Herndon, in Fulton, had 1 cow bred to the asylum bull six or seven months since. Killed and badly diseased. This cow was taken to farm, 2 miles north of Fulton, and run in a field to herself. Fisher's cattle across the public road from her. Cattle running out may have been exposed to her.

Jessie Darby, 12 miles west of Fulton, bought 2 or 3 calves from the asylum last fall. No examination made yet.

Dr. McSchooler, 5 miles north of Jefferson City, bought a bull calf from the asylum last November. Calf died March 1, with symptoms indicating the disease.

John Brown, of Audrain bought on the 2d of March, at Fulton stock sales, about 20 head of cattle sold by Hyten Bros., who lived 10 miles southwest of Fulton. They were taken to Brown's farm in Audrain. It is not known that they had any chance to contract the disease. The only circumstance connected with this herd is the fact that they were in Fulton where it is known that the disease does exist, but it is not known that they came in contact with diseased animals.

J. N. Dutton, of Readsville, 16 miles east of Fulton, and only 2 or 3 miles from Montgomery County line, bought 5 head from Jerry Muir, and placed them with 9 of his other cattle on his farm. It is claimed that these cattle have never been exposed. We do not know.

Joe Holmes, 7 miles south of Fulton, bought a calf of Hugget, at asylum. Cow since died, with strong probability that she had disease.

J. W. Roberts, 5 miles northeast of Fulton, bought 4 head from Jack Muir on March 1, and placed them with his other cattle.

Benjamin Scroggins, south of town, has 1 cow that ran out, and was exposed to the Illinois bull last fall.

The committee have killed to date the following cattle: Owens, 18; Craig, 1; Nesbit, 3; Jack Muir, 3; Gross, 1; Kibby, 1; Gallaher, 15; Petrie, 8; McSchooler, 1; Herndon, 1; Erwin, 1; Cook & Houf, 2. Total, 55. This does not include asylum herd of 85, killed by the managers.

There are in Fulton, as shown by the assessment, 198 head of cows; 38 of them have been examined by Dr. Trumbower, and 4 out of the 38 were found diseased. These animals have been running at large during the whole winter, and it is impossible to say how many others they may have infected.

There have been stock sales in Fulton on the first Monday in each month for several years past. On some days probably 200 or 300 head of cattle were sold, and carried to different and remote parts of the county, and many of them to adjoining counties. We cannot tell whether the disease was taken with them or not; we simply give the possibilities.

The committee finds at least fifty to sixty persons who have had their cattle exposed, not counting the individual exposures in Fulton. Some of these have only from 1 to 6 head. Others own from 10 to 50 head. We find to date about 1,000 cattle have been exposed directly or indirectly, and our work of discovery is not yet complete. We shall continue our investigations, and hope in another week to make a fuller and more accurate report than this.

What shall be done? We have had no trouble to induce parties to have their cattle killed when we had the money to pay for them. But our means have been very limited. So far all the money at our disposal was the amount raised at our first meeting, about $2,600, with only about $1,400 paid in. It is our object now to ascertain the extent of exposures, so as to estimate the probable amount necessary to suppress the disease. We shall do all in our power to suppress the disease, but if a stronger power than individual effort does not interpose, how long will it remain suppressed?

The stables and pastures where the diseased animals have been running should be quarantined, as it were, for a year. There ought to be some law that will compel the owners of such stables and pastures not to allow cattle to be put in them for at least a year.

The county finance committee, appointed by the State finance committee, of which you are chairman, has called a meeting of the citizens of this county to meet at Fulton on the 25th, for the purpose of raising money. What the outcome will be we cannot tell.

The spread of the disease is simply appalling. It can be more easily suppressed now than hereafter. If it is not suppressed who will be responsible? Let our State authorities answer.

Believing that you, as the chief executive of the State, are fully alive to the great interest at stake, and that you feel the great responsibility, and will do all you can to deliver the people from the effects of this sad calamity, we remain respectfully,

Your most obedient serv ants,

C. A. BAILEY,
J. L. ERWIN,
SISERA THRELKELD,
Executive Committee.

FULTON, *April* 20, 1885.

In answer to a telegram, Dr. Trumbower telegraphed on April 18 that cattle were being driven out of Callaway and shipped in adjoining counties, and that railroad agents in this (Callaway) county, outside of Fulton, received cattle for shipment. The following notice was, therefore, sent to the vice-president of the Missouri Pacific Railroad, and a

similar one to the president of the Chicago and Alton and to the general manager of the Saint Louis and Pacific Railroad:

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., April 20, 1885.

SIR: I have just been informed by Drs. Michener and Trumbower, inspectors of the Bureau of Animal Industry, that cattle which may have been exposed to pleuro-pneumonia are being shipped by rail from various stations in Callaway County, Missouri, and also being driven for shipment to stations in the adjoining counties of Audrain, Boone, Montgomery, Cole, and Osage.

In this connection I would call your attention to sections 6 and 7 of the act establishing the Bureau of Animal Industry, which provides a penalty for receiving affected animals for shipment. Considering the great danger to the whole cattle industry of the country from this disease, will you not prohibit shipments of cattle from stations in the counties above named, except when accompanied by certificates of health from our inspectors? Answer.

NORMAN J. COLMAN,
Commissioner of Agriculture.

R. S. HAYES, Esq.,
First Vice-President Missouri Pacific Railroad, Saint Louis, Mo.

The following letter from Dr. Michener was written soon after his arrival, and shows how the situation appeared to him at that time:

FULTON, MO., *April* 19, 1885.

SIR: I have spent several days here before reporting to you in order that I might learn something of the extent and character of the outbreak of contagious pleuro-pneumonia in this county. The type is one of the most mild (possibly, therefore, the most dangerous) of any I have ever witnessed. The lung lesions in most cases are very slight. This is no doubt due to the fact that the majority of cases are killed at the very outset of the disease. In only one instance have I found the typical lesions of a well advanced case. Dr. Trumbower has, I presume, stated to you the essential features of the outbreak, its history so far, &c. From the failure, chiefly of cattle dealers, to observe any quarantine regulations the disease is most likely already spread to two or more adjoining counties. Cattle are also turned upon the highways about midnight to graze until near daybreak. We are urging the immediate appointment of a State veterinarian in order that under the State law we may be able to effectually stop all movement of cattle in affected districts. We hope to have such an appointment in two or three days. With from $50,000 to $100,000 this outbreak can be stamped out. There is, I think, a better prospect here of raising funds to pay for cattle killed than there was a week ago. The community is thoroughly aroused, and trust implicitly in both Dr. Trumbower and myself. So far but one person has objected to the destruction of an exposed herd, and he only because of the uncertainty of getting speedy payment.

Yours, truly,

CH. B. MICHENER,
Veterinary Inspector.

DR. D. E. SALMON,
Chief of Bureau of Animal Industry.

The following letter for the guidance of our inspectors at Fulton explains itself:

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., April 20, 1885.

SIR: Your telegram of the 18th instant was received, and the Commissioner has sent notifications to the railroad companies and asked them if they will not prohibit shipment from counties named, except when accompanied by your certificate. I inclose copy of the telegram. It is impossible for the Department to stop shipments entirely, or to do more than prosecute the companies for shipping "affected" animals.

Can you not make arrangements with some of the canning companies to take such cattle as have been exposed and are not yet sick? Such cattle, it seems to me, might be safely shipped to Saint Louis under your supervision and slaughtered. You could give any necessary certificate that they were fit for food at the time of slaughter; and you could disinfect cars and yards in which they were placed, at the expense of the Bureau. Such a disposition, it seems to me, would enable you to get the suspicious cattle out of the way without a very heavy expenditure of money.

I have confidence in you and Dr. Michener. Your position is a very delicate one, and I hope you will carefully consider every step you take. Keep perfectly cool, and do all you can under the State and national laws, but remember that these laws are imperfect, and if you fail to stamp out the disease when using every means at your disposal, the fault is with the legislative bodies, and not with you.

If we get a decision from the Comptroller of the Treasury that will allow us to pay for cattle I will join you as soon as possible. Keep me informed of the situation and the success of present attempts to raise money.

How many actually diseased cattle have you on hand now?

Very truly, yours,

D. E. SALMON,
Chief of Bureau.

Dr. M. R. TRUMBOWER,
Fulton, Mo.

So many animals had been exposed to the contagion, and there was such imminent danger of the infection of other States and even of the ranges of the Territories, while the restrictions on inter-State commerce promised to become a source of even greater loss, that it was deemed very desirable, from a national point of view, to use every possible means of stamping out the disease at once and thoroughly. On consideration, it appeared that the animal industry law might be so construed as to allow the use of the unexpended part of the appropriation for the slaughter of diseased or exposed animals, providing this was considered as an act of disinfection. Accordingly a letter of inquiry was addressed to the Attorney-General of the United States as follows:

UNITED STATES DEPARTMENT OF AGRICULTURE,
BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., April 18, 1885.

SIR: I desire to call your attention to the act establishing the Bureau of Animal Industry, approved May 29, 1884, and to ask your opinion as to the proper construction to be given to the words "and in such disinfection and quarantine measures as may be necessary to prevent the spread of the disease from one State or Territory into another," which may be found just preceding the close of the third section. The law was the result of a demand for a measure for the suppression of the contagious pleuro-pneumonia of cattle, and while other infectious and contagious diseases of domestic animals were included among those to be investigated and suppressed, that of contagious pleuro-pneumonia was regarded as of paramount importance. As this disease is incurable, and the only way of suppressing it is by slaughter of diseased and infected animals, I desire to know if in the sense in which the word "disinfection" is used in the law, I am not authorized to purchase diseased and infected animals for the purpose of slaughter, *i. e.*, "disinfection"?

The veterinary profession, the world over, unites in recommending the slaughter of animals affected with pleuro-pneumonia, as the most essential, in fact the indispensable measure of disinfection for this disease, and this view is now accepted and acted upon by the leading nations of Europe, including Great Britain, Germany, Holland, Belgium, Switzerland, and France.

An early reply is requested.

Very respectfully,

NORMAN J. COLMAN,
Commissioner.

Hon. A. H. GARLAND,
Attorney-General.

The reply to this letter is given below:

DEPARTMENT OF JUSTICE,
Washington, D. C., April 21, 1885.

SIR: Yours of the 18th instant calls attention to the act of 1884, chapter 60, entitled "to provide means for the suppression and extirpation of pleuro-pneumonia," &c.; and, referring particularly to words giving you power to expend money "in such disinfection and quarantine measures as may be necessary to prevent the spread of disease from one State or Territory into another," asks whether by these words you are not "authorized to purchase diseased and infected animals for the purpose of slaughter, *i. e., disinfection?*"

At the same time you state that the destruction of animals infected with pleuro-

pneumonia is recognized by experts as the only way of putting a stop to the spread of that disease.

Conceding that this opinion exists, and is well founded, I nevertheless think that the statute in question does not confer power to purchase and slaughter such animals.

You will observe that the statute makes distinction betwixt the District of Columbia and other parts of the country, as regards the duties which it assigns to United States officials. In the former case only are such officials expressly directed "to require the destruction" of infected animals. The officials so empowered are not even in that case such as belong to the Department of Agriculture. They are Commissioners of the District, or in other words the local authorities, such as answer to the executive authorities of the States. For the destruction of infected animals within this District, therefore, a co-operation is provided between its legislature (viz., Congress, the statute in question affording such a co-operation) and the local executive. My understanding is that the same co-operation is intended also where such animals are to be destroyed elsewhere. And I add that inasmuch as Congress has not provided for "purchase" of these animals within the District, I presume the more that it does not intend the appropriation contained in the act so to be applied anywhere. The diseased animal, as in ordinary cases, *perit suo domino*, the hastening of such event upon public grounds, being, to all appearances, supposed by Congress to afford no ground for setting up a market for such animal wherein the public is to be purchaser.

The act in question being, as probably was anticipated, the first of a series upon that subject, is consequently somewhat general and merely tentative in its provisions; as, for instance, was the case in analogous recent legislation establishing a National Board of Health. As the results of experience and observation are accumulated upon the topic of which you speak, no doubt more definite legislation is intended.

Section 3, to which you refer, authorizes the regulations by the Commissioner of Agriculture, and supposes that these may be adopted by State executive authorities; or, as an alternative, supposes regulations by State executive authorities, which in turn it empowers the Commissioner to adopt. In either case, of course, such State executive action is to be authorized by competent State legislation. The section then proceeds to suppose a time for action to arrive, and to be notified by some proper State authority to the Commissioner. And thereupon the Commissioner is authorized, as you quote, to spend money for the quarantine action required by the particular exigency.

There is, however, as I repeat, no provisions for purchasing the diseased animals. The question, at whose loss any necessary destruction of these may be, is not a question of quarantine, and the powers of the Commissioners are incident to quarantine only, it being important, of course, that for the purpose of executing these he shall have acquired information and come to conclusions in the way indicated by section 2.

Very respectfully,

A. H. GARLAND,
Attorney-General.

The COMMISSIONER OF AGRICULTURE.

A similar letter of the Commissioner, of the 18th of April, addressed to the Attorney-General, was forwarded to the First Comptroller of the Treasury, and was promptly replied to as follows:

TREASURY DEPARTMENT, FIRST COMPTROLLER'S OFFICE,
Washington, D. C., April 21, 1885.

SIR: In reply to your request asking my construction of the act of May 29, 1884, "for the establishment of a Bureau of Animal Industry," and especially that portion of the same giving you the authority to expend the amount of appropriation as is embraced in the following words: "And in such disinfection and quarantine measures as may be necessary to prevent the spread of the disease from one State or Territory into another," I have to state:

The power given to the Commissioner by said act seems to be broad and unlimited as to the means to be used by him to carry out said disinfection and quarantine, and it is my opinion that he can cause such investigation to be made in regard to the matters mentioned in said act as he may deem proper, and then use such means as he deems best to carry out the objects and purposes of the same. If he regards the slaughter of the infected animals necessary to carry out such objects and purposes he may do so, but he cannot expend any more than the amount appropriated under any state of the case. He must keep himself within the limits of said appropriation in carrying out said act.

Very respectfully,

M. J. DURHAM,
Comptroller.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture.

On the 23d day of the same month the following additional letter was received from the First Comptroller:

TREASURY DEPARTMENT, FIRST COMPTROLLER'S OFFICE,
Washington, D. C., April 23, 1885.

SIR: I have just received a note from the Attorney-General, stating that he had written you an opinion as to your powers under the pleuro-pneumonia act adverse to the one that I had given you.

In that note he refers to the unofficial interview he and I had, but he concludes, upon a more thorough examination of the whole case, that perhaps the off-hand opinion he gave me was incorrect.

I am still of the same opinion as I was when writing to you, but perhaps for greater caution you had better act upon the opinion given by him, as he is a higher officer of the Government than myself.

I deem this explanation necessary to both the Attorney-General and myself, as I said to you that I had consulted him privately about the matter; and that is the reason why he addresses me as he has done to-day, to-wit, that he had changed his mind upon a more thorough investigation of the whole act.

Very respectfully,

M. J. DURHAM,
Comptroller.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture.

April 22 the Commissioner of Agriculture telegraphed the following rules and regulations adopted by him for the suppression of contagious, infectious, and communicable diseases, to Governor Marmaduke of Missouri, and asked him to signify his acceptance of them:

Whenever the Chief of the Bureau of Animal Industry shall be satisfied and report to the Commissioner of Agriculture that contagious pleuro-pneumonia or other dangerous, infectious, or communicable disease exists in any State or Territory, and is liable to spread from such State or Territory into another State or Territory, the Commissioner of Agriculture shall designate one or more officers or employés of said Bureau, whose duty it shall be to proceed immediately to the locality where such infectious or communicable disease is reported to exist, and either establish suitable quarantine regulations to prevent the spread of said disease or assess the value of any animal which it may be found necessary to destroy in order to extirpate said disease, or to employ both measures, if necessary for the extinction of the same.

It shall be the duty of such officers or employés detailed for the purpose aforesaid to report to the Commissioner of Agriculture the number of cattle they have found necessary to destroy, with the names of their owners, and the assessed value of said cattle, and said officers or employés shall deliver to said owner or owners certificates of the number of cattle so killed, and the assessed value thereof. Upon receiving said report the Commissioner of Agriculture shall examine the same, and if he approves of the proceedings of said officers or employés, and the assessment made by them, he may order the payment of the amounts so assessed to the respective owners of the cattle destroyed; and if he shall disapprove of the amounts so assessed, he may order the payment to said owners of such sum as he may deem a right and reasonable compensation for said cattle.

It shall also be the duty of said officers or employés to cause the carcasses of the animals found necessary to be destroyed to be burned, buried, or otherwise disposed of, and the cost of such disposition of said carcasses shall also be reported by them to the Commissioner of Agriculture, and the amount, if approved, will be paid out of the fund appropriated for such purposes. If, in the opinion of said officers or employés so detailed, the spread of such infectious or communicable disease can be prevented by the quarantining of the animals in the locality where such disease is reported to exist, then a safe and secure quarantine shall be effected, the cost of the same to be also reported to the Commissioner of Agriculture, and if approved by him the same will be paid out of the fund hereinbefore named.

NORMAN J. COLMAN,
Commissioner of Agriculture.

April 23, Governor Marmaduke telegraphed his acquiescence in these rules and regulations as follows:

JEFFERSON CITY, MO., *April* 23, 1885.

SIR: As governor of Missouri I accept the plan and method proposed in your telegram of to-day, and will earnestly co-operate with you in the execution of them. I urge you to take the most prompt steps to extirpate the disease now prevailing in

Callaway County, this State, so as to prevent its spreading, calm our people, and restore the true values of our cattle by removing the present restrictions on our commerce.

JOHN S. MARMADUKE.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture, Washington, D. C.

The success of the struggle with pleuro-pneumonia in Missouri was greatly facilitated by the prompt and active co-operation of the various railroad companies. Their willingness to assist in carrying out necessary regulations is evidenced by the communication given below:

OFFICE MISSOURI PACIFIC RAILWAY COMPANY,
New Orleans, La., April 20, 1885.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture:

Your message to R. S. Hayes, first vice-president Missouri Pacific Railway, relative to shipment of cattle from the counties of Audrain, Boone, Montgomery, Cole, and Osage, Missouri, has been referred to me for reply, and I beg to advise that I will give the proper instructions at once.

H. M. HOXIE,
Third Vice-President.

OFFICE WABASH, SAINT LOUIS AND PACIFIC RAILWAY,
Saint Louis, Mo., April 20, 1885.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture:

We will carry out the instructions of the Government, but ask that other railroads in same territory be required to do the same thing, as otherwise it will seriously affect our revenue.

A. A. TALMAGE,
General Manager.

FULTON, MO., *April* 24, 1885.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture:

I am in receipt of the following letter from the Wabash, Saint Louis and Pacific Railway Company:

"M. R. Trumbower, inspector, and H. M. Taylor, agent, Bureau of Animal Industry, Fulton, Mo.:

"Have Commissioner Colman appoint commissioners at the points below named, being within the territory infected by pleuro-pneumonia among cattle, which includes Jonesburg, High Hills, New Florence, Montgomery, Wellsville, Martinsburg, Benton City, Mexico, Thompson, Centralia, Sturgeon, Bush, Hickman, Brown, Stephens, Persinger, and Columbia, Mo. Please give me the names of the parties appointed at each of these stations at once, as our instructions to our agents are not to accept for shipment any cattle from points in the above territory unless your Commissioner approve of the same. We will issue circulars to agents to apply to this office for instructions.

"T. B. EARLY,
"*General Live-Stock Agent.*"

Taylor suggests the appointment of local freight agents, but it seems to me improper to do so. We must first definitely locate all suspected herds, then require sworn statements as to the number of cattle proposed for shipment locally, from whence they came, and the time of purchase by present owner. This should be submitted for my approval before the cattle are moved to the point of shipment. If this is satisfactory I can give the necessary order without personal inspection, unless suspicious.

Will you issue orders and regulations to be followed by us, or shall we formulate such regulations as we may deem necessary? Will you confer upon us the power to appoint sub-agents and designate the salary? Can you obtain our appointment as deputy United States marshals or police? Some persons have already refused the privilege of examination. Forward our commissions under your administration, and such blanks as you may have.

Dr. Paquin has received and accepted the office of State veterinarian. We expect his assistance next week. Have we any authority to quarantine suspected herds? Private funds are exhausted, and all now depends on your action to suppress the disease.

M. R. TRUMBOWER,
Veterinary Inspector.

The following notice was inserted in the newspapers published in the locality where the disease existed:

NOTICE IN REGARD TO CONTAGIOUS PLEURO-PNEUMONIA IN CALLAWAY COUNTY, MISSOURI.

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., April 20, 1885.

In accordance with section 7 of an act establishing the Bureau of Animal Industry, I hereby give notice that contagious pleuro-pneumonia exists among certain herds of cattle in Callaway County, Missouri. Having been informed that parties are driving and shipping cattle that have been exposed to the contagion of this disease, I desire to call the attention of all interested persons to the following sections of the law, and to state that every effort will be made to strictly enforce the provisions of these sections:

SEC. 6. That no railroad company within the United States, or the owners or masters of any steam or sailing or other vessel or boat, shall receive for transportation or transport from one State or Territory to another, or from any State into the District of Columbia, or from the District into any State, any live stock affected with any contagious, infectious, or communicable disease, and especially the disease known as pleuro-pneumonia; nor shall any person, company, or corporation deliver for such transportation to any railroad company, or master or owner of any boat or vessel, any live stock, knowing them to be affected with any contagious, infectious, or communicable disease; nor shall any person, company, or corporation drive on foot or transport in private conveyance from one State or Territory to another, or from any State into the District of Columbia, or from the District into any State, any live stock, knowing them to be affected with any contagious, infectious, or communicable disease, and especially the disease known as pleuro-pneumonia: *Provided*, That the so-called splenetic or Texas fever shall not be considered a contagious, infectious, or communicable disease within the meaning of sections 4, 5, 6, and 7 of this act, as to cattle being transported by rail to market for slaughter, when the same are unloaded only to be fed and watered in lots on the way thereto.

SEC. 7. That it shall be the duty of the Commissioner of Agriculture to notify, in writing, the proper officials or agents of any railroad, steamboat, or other transportation company doing business in or through any infected locality, and by publication in such newspapers as he may select of the existence of said contagion; and any person or persons operating any such railroad, or master or owner of any boat or vessel, or owner or custodian of or person having control over such cattle or other live stock within such infected district, who shall knowingly violate the provisions of section 6 of this act shall be deemed guilty of a misdemeanor, and, upon conviction, shall be punished by a fine of not less than one hundred nor more than five thousand dollars, or by imprisonment for not more than one year, or by both such fine and imprisonment.

NORMAN J. COLMAN,
Commissioner of Agriculture.

The following reply was sent to Dr. Trumbower's telegram of April 24 in regard to sub-agents, &c.:

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., April 25, 1885.

DR. M. R. TRUMBOWER,
Fulton, Mo.:

This Department has no authority to appoint sub-agents, such as you refer to. I asked the railroad companies to refuse cattle offered for shipment from the suspected counties unless accompanied by a certificate of health from you. This plan would require no additional force, and is the only one practical. When owners resist inspection we have no power to enforce it. Can only depend on State law for power to inspect and quarantine. Parties shipping affected cattle into another State are the only ones subject to the penalties of our law. The Attorney-General decided that we cannot pay for slaughtered animals.

NORMAN J. COLMAN,
Commissioner.

The letter given below is one among many others of a like character which illustrates the serious interruption to the traffic in live stock caused by this outbreak of contagious lung plague:

CHILLICOTHE, MO., *April* 24, 1885.

SIR: A friend of mine has 200 or 300 of cattle which he desires to drive to his ranch in Colorado. They are free from disease of any kind, and he would like to know if it would be advisable for him to start with them. Please let me know what he had better do—whether or not he will be safe in starting with them. Hoping to hear from you in full at your earliest convenience,

I remain, yours truly,

J. G. WYNNE.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture.

The following letter shows the energetic action taken by the National Cattle and Horse Growers' Association to secure vigorous measures for the extirpation of pleuro-pneumonia in Missouri:

SAINT LOUIS, MO., *April* 25, 1885.

SIR: Acknowledging your untiring efforts in connection with suppressing contagious pleuro-pneumonia in Missouri, please rest assured that the officers of the National Cattle and Horse Growers' Association may be depended upon for all possible service in co-operating with yourself and others in extirpating this dread disease. In this connection a petition, of which the following is a copy, was circulated on 'change to-day and received the signatures of over 300 prominent merchants and business men:

"*Petition.*—In consequence of the existence in the State of Missouri of contagious pleuro-pneumonia, and the absence of necessary laws to suppress and eradicate diseases among live stock; and the further failure of the State executive and financial committees to collect, by private subscription, a sufficient fund to pay for diseased or exposed cattle that may be slaughtered, and realizing that not only the live-stock interests must suffer, but that the general business interests of the city of Saint Louis, and of the State, will be greatly retarded and seriously affected by the continuance of the disease, and the consequent quarantine by adjacent States; and believing that early and effective legislation is of vital necessity in the protection thereof. Therefore we, the undersigned business men and merchants of the city of Saint Louis, Mo., do hereby respectfully petition his excellency, the governor of Missouri, to convene in special session, as early as practicable, the legislature of said State, for the purpose of framing much-needed stock laws, the establishment of a State sanitary board, the appointment of a State veterinarian, the appropriation of a fund for the purposes herein named, and for the adoption of such other measures as, in the wisdom of that body, are deemed necessary."

One of the same tenor was circulated at both the Union and National Stock-Yards, and all will go forward to the governor by to-night's mail. We will exhaust every resource in our endeavors to prevent the spread of contagions and in promoting the live-stock interests of the country.

Very respectfully,

R. D. HUNTER,
President National Cattle and Horse Growers' Association.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture.

The following is a copy of the affidavit required of those desiring to ship cattle from the infected district:

COPY OF AFFIDAVIT OF R. BAKER.

STATE OF MISSOURI, *County of Callaway, ss:*

Personally appeared before me, Robert A. Crews, a notary public within and for Callaway County aforesaid, Robert Baker, of Mexico, Audrain County and State of Missouri, who, being duly sworn, on his oath deposeth and saith: That he is the owner of ninety (90) four-year-old fat cattle, which he is going to ship to Chicago, Ill., which he bought in Callaway and Howard Counties, in the State of Missouri, in 1882; that said cattle have been in feed lot 3 miles north of Mexico, in Audrain County, Missouri, since October last, one-fourth of a mile from any other cattle; that no other

cattle have been brought among them, nor have they come in contact with any other cattle. There has been no appearance of any contagious or infectious disease among them at any time to my knowledge.

ROBERT BAKER.

Subscribed and sworn to before me this April 27, 1885. In witness whereof I have hereunto set my hand and affixed my seal at office in Fulton, Mo., the day and date above written.

[SEAL.]

ROBERT A. CREWS,
Notary Public.

Below is given an application for the appointment of an inspector at Saint Louis, and also a reply which gives the reason why this did not appear advisable:

NATIONAL STOCK-YARDS, *Saint Louis, Mo., April* 29, 1885.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture:

Can you appoint an inspector at Saint Louis to meet Governor Oglesby's proclamation? Missouri, I understand, has no authority to appoint inspectors.

ISAAC H. KNOX.

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., May 1, 1885.

ISAAC H. KNOX,
National Stock-Yards, Saint Louis, Mo.:

The State of Illinois requires a certificate not only that the cattle to be admitted are free from pleuro-pneumonia, but that they have not been exposed to it within one hundred days. As it is not yet known to what extent exposed cattle have been scattered in Missouri, it would be impossible for our inspectors to give the required certificate even if they examined the cattle at your stock-yards.

NORMAN J. COLMAN,
Commissioner.

A similar application was made by the superintendent of the Kansas City Stock-Yards, and a reply of the same nature was telegraphed, and is given in full below:

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., May 1, 1885.

H. P. CHILDS,
Superintendent Stock-Yards, Kansas City, Mo.:

Both inspectors are at Fulton, where their services are greatly needed. They are arranging to give certificates for cattle shipped from Callaway and adjoining counties. The infected cattle have not been all traced, and an inspector at your yards would simply have to take the statements of the owner as to whether cattle had been exposed, and could not give a certificate of any professional value. Under such circumstances it seems best to keep the inspectors at Fulton for the present.

NORMAN J. COLMAN,
Commissioner.

The following was received soon after the above telegram was sent:

KANSAS CITY, MO., *May* 1, 1885.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture:

I am here with 4 loads of bulls for New Mexico, with a bill of health from our State veterinarian. Cannot get through for the want of an efficient man as agent of Bureau of Animal Industry. Others are here desiring to get through the quarantine. Can you do anything to raise the blockade?

S. HICKMAN.

Owing to the above and many similar requests, which showed that an inspector at Kansas City would greatly assist the inter-State commerce in live cattle, the following telegram was sent to Dr. Trumbower:

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., May 2, 1885.

Dr. M. R. TRUMBOWER,
Fulton, Mo.:

Go to Kansas City at once and see what you can do to facilitate shipment of cattle. Be very careful as to the wording of any certificates you may give, and certify to such cattle only as you are certain have not been exposed. Keep a record of statements and history in regard to each herd passed upon. Dr. Michener will remain at Fulton.

NORMAN J. COLMAN,
Commissioner.

The following document, issued by the secretary of the Missouri State Board of Agriculture, is of interest in this connection:

MISSOURI'S DISTRESS AND DANGER.

OFFICE OF SECRETARY MISSOURI STATE BOARD OF AGRICULTURE,
Columbia, Mo., May 1, 1885.

We the undersigned, executive committee of the State Board of Agriculture, do hereby authorize the secretary of the board, J. W. Sanborn, to organize ways and means to raise money and dispose of it in such manner as will contribute to stamp out the cattle disease now so prevalent in Callaway County, this State, and report to this committee from time to time.

JOHN WALKER,
H. ESBAUGH,
J. W. SANBORN.

Under the action thus taken the Secretary received from his excellency, John S. Marmaduke, the following indorsement by telegram, namely:

"Yours of yesterday received. I heartily indorse and commend the plan adopted by the executive committee of the Board of Agriculture. The State treasurer is away just now, but I will vouch for his acceptance of the trust. Make arrangements carefully that no error or confusion may embarrass the enterprise, and push it rapidly and with vigor. Now, let us quit talking about an extra session, and give our attention to raising this money immediately, and as fast as it is received it will be used in extirpating the disease."

That this action of the Board of Agriculture through its executive committee may not seem presumptuous, it may be stated that the Board is the only official organization for the promotion of agriculture in the State. By official we mean holding commissions from the governor, and founded in the laws of the State. That its character may be known, its membership is given:

Ex-officio members.—John S. Marmaduke, governor of Missouri; W. E. Coleman, superintendent of public instruction; S. S. Laws, L. L. D., president of University of Missouri; J. W. Sanborn, dean of Agricultural College.

Commissioned members.—Hon. John Walker, Jefferson City, Cole County; Hon. N. J. Colman, Saint Louis; Hon. H. Esbaugh, Hanover, Jefferson County; C. E. Leonard, esq., Bell Air, Cooper County; J. A. Potts, esq., Mexico, Audrain County; W. M. Hall, esq., Walker's Station, Vernon County; M. Fairchild Doud, esq., Kansas City; John R. Rippey, Glenwood, Adair County.

It properly falls within the duty of the above organization to act in this matter, and the above names and the plan to be hereafter outlined will, it is believed, commend the enterprise.

It may be proper to state that so long as there was a pressure for an extra session of the legislature it was thought useless to act in the capacity now assumed, but now that it is definitely known that no extra session will be called, all can unite upon one plan upon which complete success, it is now believed, may be achieved.

The need of action.—The preceding facts were arranged for publication, with other matter, when the excitement regarding pleuro-pneumonia was at its highest in the State, but just at the completion of this article the State veterinarian, Dr. Paul Paquin, reported that the disease was confined to an area of 10 miles from Fulton, and that it was "virtually extirpated." Since then, in a statement directed to me as dean of the Agricultural College, Dr. Michener, United States veterinarian stationed

at Fulton, of high reputation as a veterinarian, repeats the assuring words, and says that not an acute case exists, in his belief, in Callaway County, and none has appeared beyond 12 miles from Fulton, yet he advises raising $10,000.

Why now raise money?—Because history in no department of human affairs has shown more clearly a necessity than the one now before us. The most insidious of all diseases is within our borders, whose insidious character, the bulletin No. 15, recently issued from the Agricultural College, and now before the most of those who will receive this, shows:

(1) It is months, often, that an animal is affected with the disease, and to untaught eyes is not noticed, and yet the animal may be imparting the disease to others.

(2) The animal apparently gets well, yet its lungs contain the disease and imparts it to others. The cow that went to Australia and gave the disease that swept away $44,000,000 of stock was an apparently recovered case. Massachusetts believed she was rid of it only to find it burst forth fifteen months after. Illinois is now startled by its reappearance at Peoria, seven months after she believed she was clear of it. Kentucky, during the last week, again reports it where it had slept for months unseen.

This is its history. Callaway County and its veterinarians report no visible case, having killed over 220 animals. But the veterinarians each send out a warning, and the sum of $10,000 is named as necessary for any lurking cases, for it is not the sick that are alone to be killed, but every infected herd must go. Illinois and Kentucky have just learned that they should have killed the herd and not merely the sick ones, leaving the balance as hidden breeding grounds and centers of propagation months after.

Then let the mistakes and experience of others be our warning. Let us like men be guided by the history of the past and not by animal carcasses in the future, and perhaps too late. Indeed, now is the critical time for completing the work, and yet the tendency is to go to sleep on the question. There are several herds in which the disease may appear, near to Fulton, whose value may reach $10,000, and whose purchase Callaway County farmers say they cannot andought not to make. They ought not to be asked to. Why? Because the disease involves the interests of the whole State. Feeding the fears of other States, whose interests this dangerous disease threatens, our State is girdled on three sides with a quarantine that has brought a commercial night upon our stock commerce and threatens a paralysis of all business life in Missouri.

Representing $70,000,000 to $80,000,000, our cattle industry forms one of the largest and most profitable of the resources of the State. The mercantile business of every city and village draws life from it; the banks of every community are involved in its prosperity, and the labor of every town and the sustenance of most farmers are directly involved in its welfare. With one of the best soils, climate, and location for breeders of fine stock, Missouri has become among the first of States in reputation for its fine herds, and is now or was a great purchasing ground for breeders for the vast herds of the plain. That business is almost completely strangled by the quarantine that has shut down around us. Herds that two months ago were worth $20,000 are not to-day salable for $10,000, yet they are only tainted by association and not by disease. The tenacity with which this disease clings to the skirts of our sister States tells us with no uncertain sound that unless we act upon the theory that this disease is but slumbering, we shall leave it as a patrimony to our sons, and their sons to the third and fourth generation, and at last and soon stab fatally the nation's export trade in live animals, sacrificing thereby the most hopeful feature of our agriculture and the corner-stone of the highest type of farming.

This disease may lurk for millions, but cash down will take thousands; it demands the future, but can now be put off with months; it asks every county, but may be put off with one.

Is it pleuro-pneumonia?—We offer no argument to those who affect to understand other trades than their own better than their taught workers. Government veterinarians, our State veterinarians, and the veterinarians of other States, sent in the interest of their States, which interest is not to quarantine well stock and paralyze trade, have pronounced it pleuro-pneumonia, and the consequent quarantine has actually driven land buyers out of our State, affected the value of land in the affected area, if not over the State, has depreciated the value of our herds of the whole State; brings several telegrams to this office every day from distant sections of the State for professional aid, that their stock may be shipped to the beef markets, and the owners are now convinced that we are not dealing with a local question, as some would make it, and not aid in the matter. We are not fighting a man of straw, but a terrible demon that may still be lurking in the one unfortunate county.

Gentlemen, the suspicion that this incubus is upon us must be lifted off and at once, and no one in the state will be denied his clear right to aid with his money. It is purely a business question. We have got to satisfy the world on this point and the quicker the better, for now is the most opportune time, for the disease is checked by

the vigor and skill of a few citizens of Callaway County. Its area of suspicion is confined within 12 miles of Fulton. It is under the power of two quarantine laws of the State, and the right by law to kill. It is so controlled that one at least of the most troublesome quarantines against us is under consideration, and likely to be raised. We are to have no session of the general assembly; Callaway County should not and cannot be expected to meet the possible danger, and we should not ask her to carry the load alone. It is necessary to do this work to satisfy other States, and even if there had been no disease in the State we could well afford to raise half a million to satisfy these States.

Conditions of donations.—(1) His excellency, John S. Marmaduke, promises to recommend the next general assembly to repay these sums contributed, and in this matter is sustained by many members likely to return. (2) All the counties will be asked to aid and may become interested in future as donors. (3) All donations to be daily published by the Treasurer in one or more prominent dailies, as received, that no question may arise as to what becomes of the money. (4) The State treasurer is to receive directly all money donated, and pay out none except upon vouchers, each voucher giving a narrative of the case on which the money is paid; the governor, auditor, and attorney-general, as a committee, auditing said vouchers—thus having right at hand in the treasurer's office all the costs, and vouchers for the same, to present as a whole to the general assembly. (5) Any money not expended will of course be returned pro rata. (6) All cattle killed are to be appraised by three farmers at a rate less than full market value or on a basis of two-thirds valuation. The committee is organized and is indorsed by Governor Marmaduke, and is the same that has done the appraising thus far. (7) The State veterinarian, who is connected with the Agricultural College, will be at the command of the authorities, and no cattle will be killed without his or the Government veterinarian's inspection and certification of disease.

A personal question.—Please to remember that this move is indorsed by the governor, is in accordance with a vote taken by a meeting of eminent gentlemen at Mexico on May 7, over whom ex-Governor Hardin presided; is said to be necessary by the veterinarians, and will aid in placing us right before the world; that the move is not an idle or narrow one, but that the money must and will be had, and that it is you who ought to assist, and that the only difficulty in the scheme is that you yourself may pass it along to some one else among the great crowd that constitute the State.

Please act at once, and commerce in cattle will in a short time flow freely from all counties, save Callaway, and in due time from that county, under proper restrictions.

Urgently submitted.

J. W. SANBORN,
Secretary Board of Agriculture.

NOTE.—I trust our sister States will remember that this dire disease is confined to one county, and a fraction of that, and that the effort of our people to raise money should reassure them and not alarm. If our people were apathetic then alarm would be well grounded. Your duty to lift the quarantine against us, save for one county, is clear. We are a member of the family, and are entitled to a good standing with our stock.

J. W. S.

The following letter, sent in reply to a telegram received from the governor of Illinois, gives a condensed summary of the measures in force in Missouri to suppress the disease:

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., May 5, 1885.

SIR: In reply to your telegram of this date asking for the regulations of the Department of Agriculture in regard to the quarantine of pleuro-pneumonia in Callaway County, Missouri, I beg to state that the railroad companies which have stations in Callaway and adjoining counties have been notified not to receive any affected cattle for shipment to other States under the penalty prescribed in sections 6 and 7 of the act establishing the Bureau of Animal Industry. Notices of the existence of the disease have also been published in the local papers, and the attention of the public called to the penalties for such shipment of cattle. In addition to this the railroad companies have issued regulations prohibiting the shipment of cattle from these counties unless accompanied by a clean bill of health from our inspectors. Our inspectors are doing all in their power to locate infected herds and to prevent the shipment of dangerous animals.

Very respectfully,

NORMAN J. COLMAN,
Commissioner.

Hon. R. J. OGLESBY,
Governor of Illinois, Springfield, Ill.

The following communications explain themselves:

KANSAS CITY, MO., *May* 6, 1885.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture:

May Dr. Trumbower act as inspector for Kansas at this point in connection with his other duties?

A. A. HOLCOMBE,
Secretary Sanitary Commission.

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., May 7, 1885.

Dr. A. A. HOLCOMBE,
Secretary State Sanitary Commission, Kansas City, Mo.:

Dr. Trumbower is stationed in Kansas City temporarily to facilitate the shipment of cattle. He will gladly examine any suspected cattle in the vicinity, and I have no doubt will cheerfully give any information or assistance to your commission which may be in his power, and which does not interfere with the work assigned him by this Department.

NORMAN J. COLMAN,
Commissioner.

KANSAS CITY, MO., *May* 9, 1885.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture:

At Armourdale a number of cattle-pens are located, and all cattle coming from infected or suspected localities will be subjected to the orders issued by the Kansas City Stock Company, that each car running through Missouri must have a label on each side stating where the inclosed cattle came from. They will be met by men stationed at the point of entrance to said stock-yards, who will require to see the shipping bill, and if such cattle are from suspected localities they will be sent to the quarantine pens at Armourdale. I ought to be informed by Dr. Salmon from time to time of the districts infected with disease in the different States.

Dr. Holcombe wants to appoint me agent for Kansas inspections at this point in connection with your Department. He has so far failed to find any one on whom he can rely. If Kansas will do this I think Colorado and Wyoming will follow. May I accept these places and retain my present position? I really think it would be a good plan. Several thousand bulls will be shipped West during this month, and will move as soon as the requirements are published. I would like to hear from you on Monday.

M. R. TRUMBOWER,
Veterinary Inspector.

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., May 11, 1885.

Dr. M. R. TRUMBOWER,
Kansas City, Mo.:

You may assist the Kansas authorities while stationed at Kansas City, but an appointment which would make you subject to their orders, or which would interfere with work that this Department may desire you to do, cannot be permitted while you occupy your present position.

NORMAN J. COLMAN,
Commissioner.

KANSAS CITY, MO., *May* 13, 1885.

Dr. D. E. SALMON,
Chief of Bureau of Animal Industry:

G. D. Duckworth is authorized by cattlemen of the Indian Territory to buy bulls on the market here regardless of any history of them. I advise you to induce the authorities to establish regulations for the Territory, as it is not safe to allow cattle to go there without necessary inspection or affidavits any more than other parts of the West. I am very busy and careful. Everything is upside down now, but I think we will get straight in a few days.

M. R. TRUMBOWER,
Veterinary Inspector.

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., May 15, 1885.

SIR: Your telegram of the 13th instant in regard to the shipment of bulls to Indian Territory was duly received. I cannot see that we have any authority to establish regulations in regard to such shipments unless it can be shown that the anim-

are actually diseased. While we must acknowledge that such shipments must be more or less dangerous, it seems impossible for us to supervise them in any way.

Your letter of the 12th instant is also at hand. I am glad you are getting along so well with the disease, and that you found it possible to assist the shipment of cattle by giving certificates. I do not want you to sign any certificates unless you can do so conscientiously, and for that reason you were instructed in the telegram which the Commissioner sent ordering you to Kansas City. If Kansas or any other State desires certificates which you do not feel that you can sign with a clear conscience, I would simply put the responsibility upon them, and have nothing to do with it. On the other hand, I am anxious that you should do anything possible to facilitate shipments where you feel there is no danger.

Very respectfully,

D. E. SALMON,
Chief of Bureau.

Dr. M. R. TRUMBOWER,
Kansas City, Mo.

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., May 16, 1885.

SIR: Your favor of the 9th instant, inclosing petition signed by citizens of Nodaway County, Missouri, asking for the appointment of a cattle inspector in that county, is at hand. In reply I desire to call your attention to the fact that under the law establishing the Bureau of Animal Industry the number of employés at any one time is limited to twenty men for the whole country; four of the twenty are now located in Missouri, while pleuro-pneumonia exists among more cattle in each of at least ten other States than are affected in Missouri.

We have a large field to cover and much important work to do. The full number of men allowed for the work of the Bureau have already been appointed, and it does not seem possible for us to comply with the request of the signers of the petition. This Department has placed no restrictions upon the shipment of cattle from Nodaway County, and all regulations bearing upon such cattle have been established by the local authorities of the different States, over which we have no control. Such inspection as is asked for would more properly come within the duties of the State veterinarian of Missouri, and the shipments can undoubtedly be made under the regulations of the State of Illinois, which allow admission for such cattle as are accompanied by a certificate of health from the State veterinarian.

Regretting that it is out of my power to comply with the request of your constituents, I desire to assure you that I am anxious to do everything that is possible to relieve the citizens of Missouri from their present difficulties.

Very respectfully,

NORMAN J. COLMAN,
Commissioner of Agriculture.

Hon. JAMES N. BURNS,
Saint Joseph, Mo.

Copy of certificate required for shipment of cattle west from Kansas City.

STATE OF ———,
County of ———, *ss:*

Personally appeared before me, ——— ———, and ——— ———, who, being duly sworn, on oath, say that they are citizens of the county of ———, State of ———, and that they know ——— ———, owned by ——— ———, of the county and State aforesaid, have been held on the premises of ——— ———, for the period of four months prior to the —— day of ———, 1885; that they have been healthy and exposed to no contagious or infectious disease; that no contagious or infectious disease is known or believed to exist in the said county of ———, and that they are not interested in said cattle in any manner as owners or otherwise.

———— ————.
———— ————.

Subscribed and sworn to before me this —— day of ———, 1885.

———— ————.

I, ——— ———, hereby certify that ——— ——— and ——— ———, whose names appear in the foregoing affidavit are responsible and reputable citizens of ——— county.

———— ————,
County Clerk

STATE OF ———,
County of ———, *ss:*

———— ————, being duly sworn, says he is owner of the cattle about to be shipped from ——— to ———; that they are the identical cattle described in the foregoing affidavit; that shipment has been direct from ——— to ——— without unloading, except for feed and water, in cars that were cleansed and disinfected, and that on arriving at his destination the said cattle will be kept on his premises separate and apart from all cattle belonging to other parties for a period of ninety days.

———— ————.

Subscribed and sworn to before me this —— day of ———, 1885.

———— ————.

This is to certify that on the —— day of ———, 1885, I inspected the animals described in the foregoing affidavits and certificates and found them free from all contagious and infectious diseases.

———— ————,
Inspector for ———.

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., June 4, 1885.

SIR: I am in receipt of your favor of the 1st instant, and as you think it will be safe to leave the Fulton matter in the hands of the State veterinarian after you are obliged to return, I think I shall adopt this course. It does not seem necessary, or even desirable, that we should keep a man on the grounds simply to secure the credit of preventing another outbreak. In other words, I do not feel that I have a sufficient force at my disposal to waste the time of our inspectors for mere sentiment. I hope, however, you will consider the matter carefully, and if you see any reason for me to send another man to take your place I will be glad to do so. My whole object is to secure the safety of Missouri from another outbreak of this disease. It might be well for you to consult Dr. Paquin and see if he desires any further assistance than can be rendered by Dr. Trumbower.

Very respectfully,

D. E. SALMON,
Chief of Bureau.

Dr. C. B. MICHENER,
Fulton, Mo.

Dr. Michener was called home by private business about June 15. As there had been no case of pleuro-pneumonia among the exposed cattle for nearly two months, and as a State veterinarian had been appointed to look after local interests, it was not considered necessary to keep an inspector constantly stationed at Fulton after that time. In the following letter Dr. Trumbower was directed to make a final inspection and report results:

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., July 13, 1885.

SIR: On receipt of this you will please go at once to Fulton and make a thorough inspection of all suspected herds in that vicinity, and report their condition and the probability of any further cases of disease. You will also note the time when the last affected animal was destroyed in any herds reported upon, and state if in your judgment there is any further necessity of maintaining the restrictions upon shipments of Missouri cattle. Cannot trade go on as usual through Kansas City, without an inspector being stationed there from this time onward?

Very respectfully,

D. E. SALMON,
Chief of Bureau.

Dr. M. R. TRUMBOWER,
Kansas City, Mo.

To this letter the following reply was received:

FULTON, MO., *August* 1, 1885.

Dr. D. E. SALMON,
Washington, D. C.:

I fail to find any further evidence of disease among the cattle here. The last affected one was killed April 18.

M. R. TRUMBOWER,
Veterinary Inspector.

Nearly three and one-half months having elapsed since the destruction of the last affected animal, it was now considered safe to withdraw the inspector of the Bureau. The State veterinarian has since kept up a supervision of this district, but no other cases of pleuro-pneumonia have developed. The disease was, therefore, stamped out, and in a very much shorter time than most people considered possible. For this happy result we are very much indebted to the active co-operation of the railroad companies doing business in that part of the State, and to the vigorous measures adopted and carried out by the citizens.

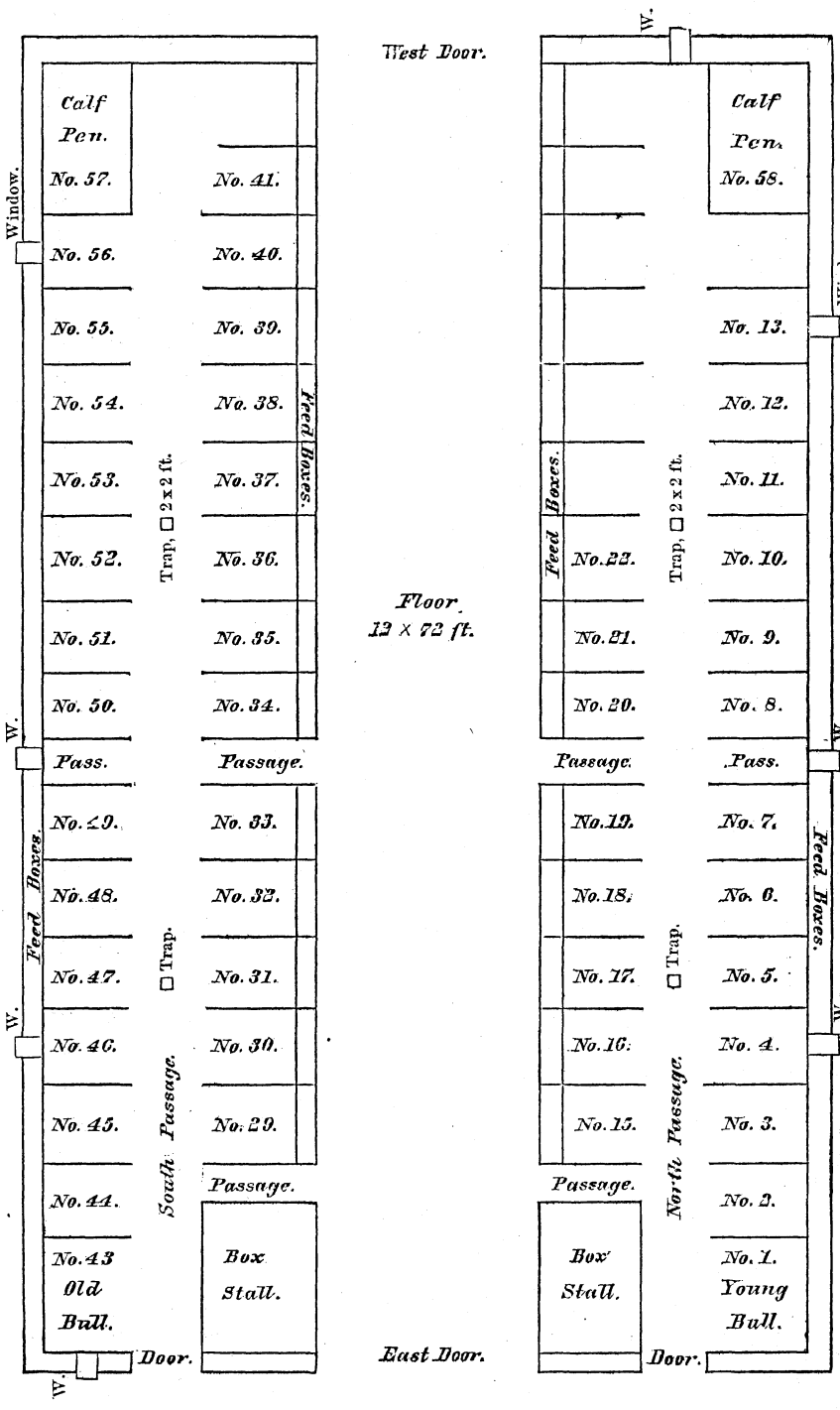
I give in this connection Dr. Trumbower's report, which contains many facts not mentioned above. This report was dated October 4, 1885, and is as follows:

SIR: A telegram from Hon. George B. Loring, then Commissioner of Agriculture, was received by me on the 25th of February, at Ozark, Ark. This telegram requested me to go to Fulton, Mo., and investigate a disease among the cattle at the State Lunatic Asylum No. 1. I arrived on the 28th, and on March 1 called upon Dr. T. R. H. Smith, the superintendent of that institution. He told me they had lost 9 head of cows since New Year's out of their herd of 85. He said:

"We never had any disease in our herd, which is composed of high-grade Jerseys, until about the 25th of January, when our dairyman, Mr. John Gilmore, told us that 2 of the cows were dead, having suffered with a black watery diarrhea for three or four days previous to death. We gave this no special attention and made no autopsy. About the 1st of February we discovered another one sick, which showed evidence of some lung disease; she had a painful cough, breathed hard, and moaned at every breath. This animal died in two or three days, and a few days later another one died with the same class of symptoms. We made *post-mortem* examinations, and found the lungs seriously diseased and attached to the chest and diaphragm, but not being experts in cattle diseases we were at first inclined to believe these two cases were perhaps simple cases of pneumonia or ordinary pleuro-pneumonia, although my suspicions were to some extent aroused. In a short time several more followed, and then I felt confident that the terrible disease, contagious pleuro-pneumonia, was in our midst."

I then asked Dr. Smith to give me a history of their herd, number of recent purchases, shelter, care, &c., which he did, as follows:

"About nine years ago a friend of mine in Kentucky sent me a Jersey cow and bull calf. After receiving them the thought occurred to me that I had a fine opportunity for gradually improving the milk herd of the institution by crossing with the Jersey and the best ordinary milch cows. In a few months the calf was ready for service, and we then began the process of improvement by retaining all the female calves from the best cows. After this bull reached the age of four or five years, to prevent in-and-in breeding, I changed the old bull for a young thoroughbred Jersey. This young animal died in a very short time after we received him, but the progressive improvement of the herd had been so satisfactory, and being very anxious to continue it, I purchased another fine thoroughbred Jersey, and from that time to July, 1884, the improvement had been regularly progressive till we had accumulated, from our own raising alone, about 85 very high grade Jerseys. In July last, to render our herd strong and healthy, and avoid in-and-in breeding, we sent to Mr. Tripp, of Peoria, Ill., for a thoroughbred Jersey, and we purchased Queenettes Duke, No. 9869. This bull was delivered on board cars at the latter place on July 19, and arrived here on the 21st. He was taken to our barn and placed with our herd; on the 24th he served one and on the 28th another of our cows. Three days after he was tied in the barn; we took him out and turned him into a lot which contained about twenty spring and summer calves. On the 23d of August we received a letter from H. D. and S. S. Tripp, stating 'that pleuro-pneumonia had appeared in their herd; that the day the bull left their barn they had a cow in the barn which was sick with the disease, and which died on the 27th; that since that time the mother of Queenettes Duke died, also a fine heifer calf; that they were satisfied contagious pleuro-pneumonia existed in their herd, and they advised the removal of the bull from the rest of the herd for a period of three months, for fear he might develop the disease and contaminate the asylum herd.' This advice was followed. We took the bull out of the calf pasture and placed him in an isolated field one-half mile distant from our farm, where he was kept closely confined in a barn for two weeks, and afterwards, for two months and a half, allowed to run loose in a 20-acre field. Manifesting no symptoms of disease, and having improved in flesh and growth, he was brought back into the herd about the 1st of November. No other purchases than those mentioned have been made by us, and our herd had very little chance for coming into contact or close


West Door.
Calf Pen. No. 57.
No. 41.
Calf Pen. No. 58.
Window.
No. 56.
No. 40.
Window
No. 55.
No. 39.
No. 13.
No. 54.
No. 38.
Feed Boxes.
No. 12.
No. 53.
No. 37.
Trap, 2 x 2 ft.
Feed Boxes.
No. 11.
No. 52.
No. 36.
Trap, 2 x 2 ft.
Feed
No. 22.
No. 10.
Floor 12 x 72 ft.
No. 51.
No. 35.
No. 21.
No. 9.
No. 50.
No. 34.
No. 20.
No. 8.
W.
Pass.
Passage.
Passage.
Pass.
W.
Feed Boxes.
No. 49.
No. 33.
No. 19.
No. 7.
Feed Boxes.
No. 48.
No. 32.
No. 18.
No. 6.
W.
No. 47.
No. 31.
Trap.
No. 17.
Trap.
No. 5.
W.
No. 46.
No. 30.
No. 16.
No. 4.
No. 45.
No. 29.
South Passage.
No. 15.
North Passage.
No. 3.
Passage.
Passage.
No. 44.
No. 2.
No. 43 Old Bull.
Box Stall.
Box Stall.
No. 1. Young Bull.
Door.
East Door.
Door.
W.

proximity to outside cattle. We aim to keep our fields well fenced, have the best cattle barn in the county, good, pure water in abundance, and, as milk is the article we are after, we are necessarily compelled to feed liberally and furnish proper shelter during all seasons of the year. Mr. Gilmore, our dairyman, is in charge of the herd, and has sufficient assistance to give it the best possible care."

The nine head of cattle which died previous to March 1 had occupied stalls, as per diagram of stabling, in order as follows:

First death (No. 17).—Died January 25; no *post-mortem* examination.

Second death (No. 37).—Died January 25; no *post-mortem* examination.

Third death (No. 31).—Died January 31; *post-mortem* by Gilmore. He said the lungs weighed 75 pounds, and were covered with a thick scum.

Fourth death (No. 16).—Died February 11; had refused her feed for six days, breathed quick and moaned. Watery diarrhea set in before death. *Post-mortem* by Dr. Tichenor. Left lung covered with thick layer of coagulated lymph, and was firmly hepatized, presenting a red and gray mottled appearance.

Fifth death (No. 7).—Died February 12; sick same length of time as the last. *Post-mortem* by Dr. Young. Both lungs immensely swollen, and in gangrenous state.

Sixth death (No. 19).—Died February 14; had been sick eight or ten days. Respirations difficult, moaned, head extended, refused to lie down, appetite suspended towards the last. *Post-mortem* by Drs. Smith and Tichenor. Left lung firmly adherent to the ribs, and extensive effusion in the thorax. The lung was very solid, and on section presented carnification, portions of it about to become necrosed. Anterior part of right lung in a stage of gray hepatization.

Seventh death (No. 3).—Died February 15; ate one-half her feed in the morning, and at feeding time appeared perfectly healthy. Before noon she was dead. *Post-mortem* by Drs. Smith, Tichenor, and Young. Very extensive albuminous exudation in the trachea, confined to about 4 inches in length, beginning 3 inches anterior to the bifurcation. The caliber of the trachea was diminished, so it would not admit the little finger of a person. The anterior part of the left lung was heavily congested. Died by suffocation.

Eighth death (No. 2).—Died February 22. She was killed as soon as sickness was discovered. *Post-mortem* by Gilmore. Serum and coagulated lymph in the thorax, and the lungs were almost gangrenous and very offensive.

Ninth death (No. 30).—Died February 23. Was killed when found sick. No examination. Mr. Gilmore afterwards told me that both the latter cases had quit eating and commenced to grunt in breathing before they were killed. I was unable to obtain any very accurate history of those cases, even as to the exact dates when they died or the length of time they were known to be sick.

On the 2d of March, I commenced my examinations. Mr. C. O. Atkinson and Mr. J. Gilmore accompanied me into the east meadow, where the Tripp bull (young bull we called him, in contradistinction to the five-year-old bull which was stabled in the barn) was running with 20 one and two year old heifers and 2 dry cows. All of the cattle, except two, appeared well to any ordinary observer. The bull especially appeared vigorous and heathy. We caught him and I examined him very carefully, but failed to detect positive evidence of previous or present disease. I could detect a slight circumscribed dullness over the lower part of the left lung and some rubbing sounds, but they were not sufficiently well marked upon which to base an opinion; temperature, 100° F.; respirations, 18. Subsequently I examined him a number of times before he was killed, but could never discover any increase of temperature or of respiration, and at times the percussion and auscultation revealed no abnormal sounds whatever.

We examined the two animals which showed visible evidence of unthriftiness, in both of which I detected plain evidence of lung disease. The milch herd was then driven into the barn, and I examined a large number of them, in many of which I found lung disease existing with or without increase of bodily temperature. All of these cows, with one exception, had been supposed to be perfectly healthy, were yielding reasonable quantities of milk, and had never to the knowledge of the attendants missed a feed. I heard a number of them coughing, and after calling Mr. Gilmore's attention to it he admitted that ever since last fall he had occasionally heard some of them wheeze.

PERSONAL OBSERVATIONS, CLINICAL AND POST-MORTEM.

Cow No. 10.

March 2.—Morning temperature, 103°.2; respiration, 44. Slight grunt in respiration; inferior portion of right lung consolidated and impervious to air; eats slowly; yielded 1½ gallon milk this morning. Evening temperature, 103°; pulse, 70; respiration, 40.

March 3.—Temperature, 103°; pulse, 74; respiration, 60. Tympanitic; moans al-

most continually; percussion causes flinching from pain; refused to eat during the night and morning; yielded one-half gallon milk this morning; stands in one position and is disinclined to move.

March 4.—Temperature, 102°; respiration, 60. Tympanitic and bowels costive; urine high colored; refuses to eat or drink; pulse weak and irregular; friction sound on the left side and increased dullness on the right; inclination to lie on the right side with head extended, and frothing from the mouth; yielded one pint of milk.

March 5.—Temperature, 102.°5; respiration, 70. Tympanitic; appetite suspended; milk secretion suspended; pulse very weak; breathing very labored and painful.

March 6.—No appreciable change.

March 7.—Killed her for examination. Present, Drs. Smith, Tichenor, and Young, the physicians to the asylum, Dr. Howard and Dr. Herndon, two of the board of managers, and Prof. J. W. Sanborn, the dean of the State Agricultural College.

Autopsy.—The anterior and part of the posterior lobe of the right lung was firmly attached to the ribs by fibrinous deposits, and so firmly to the pericardium that no dissection to separate the respective parts could be made. The external aspect of this lung presented a yellow and purple mottled appearance. On making an incision into the consolidated lung a cyst was discovered, which contained a piece of necrosed lung structure, measuring 4 by 6 inches. This was bathed in a dirty gray liquid. After cutting through the dead mass it revealed that marbled appearance which is so characteristic of contagious pleuro-pneumonia, and it was apparently in a perfect state of preservation. The occluded blood vessels and bronchi were also plainly defined, as well as the organized fibrin in the interlobular spaces. This lung probably weighed 30 pounds. But very little liquid effusion existed on this side. A small portion of the left lung presented evidences of recent invasion, and half a gallon of straw-colored serum was found in this side of the chest.

Cow No. 8.

March 3.—Temperature, 105°.2; respiration, 36; complete dullness on percussion over lower half of left lung. Appetite suspended, but failed in eating for the first time this morning. Yielded one-half the usual quantity of milk. In the evening her milk secretion was entirely suspended; pulse, 84; temperature, 105°; respiration, 36; slight moan in breathing.

March 4.—Temperature, 105°.2; respiration, 40. Moans at each expiration of breath. Lying down a great part of the time, preferring the right side. Appetite absent. In the afternoon at 3 o'clock we killed her for examination in the presence of Drs. Smith, Tichenor, Young, and Dewey.

Autopsy.—On removing the left wall of the chest a gallon of limpid serum escaped, in which floated shreds of coagulated lymph; a heavy layer of fibrin covered the posterior lobe, and a layer 1 inch in thickness was adhering to the pleura-costalis in the anterior and inferior part of the chest. The posterior portion of the left lung was firmly attached to the diaphragm by fibrinous deposit. On incision being made through the diseased lung the pathognomonic yellowish gray striæ defining the interlobular spaces, the complete dark red infarction existing in the central part of the lung, and the more recent invasion of healthy lobules, were plainly marked. The parts recently invaded were shown by the color of the affected lobules, the more gelatinous lymph deposit in the cellular structure, and when cut into a flow of light straw-colored lymph followed the scalpel. This *post-mortem* examination is the first one made by me in this herd, and upon the evidence here revealed, *ante* and *post mortem*, together with the history of the previous cases detailed by Dr. Smith, I based my diagnosis, and informed you by telegram that *contagious pleuro-pneumonia existed among this herd of cattle.* I also wrote a letter to Prof. J. W. Sanborn, secretary of the State Board of Agriculture, at Columbia, Mo., informing him of the existence of the disease present in his State.

Cow No. 39.

March 4.—This cow was served by Queenettes Duke (Tripp bull) on the 26th day of July. On the 28th of February she aborted. Mr. Gilmore informed me that she had had a dry, short cough since last summer; that she did not keep in flesh like the balance of the herd, but was always gaunt, although she ate well and apparently felt as well as any of the cows in the herd. I found her temperature 102°.8; respiration, 38. Abnormal resonance on left side; posterior half of right lung resonant, but anteriorly and inferiorly marked dullness was elicited on percussion.

March 5.—Temperature, 102°.6. After careful auscultation and percussion I formed the conclusion that the disease was located almost entirely in the anterior part of the chest, and that a considerable amount of consolidated lung structure existed, as I could feel the impulse of the heart's beat much plainer on the right than on the left side, and the pulsation conveyed the impression to the touch that it was transmitted

through a dense body. The cough was very frequent, which also led me to believe that here we had a very fine old case.

March 10.—On this day the legislative investigating committee was present to see for themselves whether or no such disease existed among this herd. I killed this cow believing this to be in all probability one of the oldest cases in the stable. As three members of this committee were physicians, and supposed to be practiced in auscultation and percussion, I requested them to make a thorough examination. They did so, but, not being engaged as "cow doctors," they felt no desire to express an opinion. However, she had to die, and the *post-mortem* examination revealed some adhesion of the anterior lobe of the right lung to two of the ribs; the whole of the anterior lobe consolidated and firmly united by fibrinous exudate to the pericardium. On cutting into this solid mass an abscess was discovered which contained a mass of dead lung structure 4 inches in diameter; a portion of the original part had undergone softening and liquefaction, but the greater part of it was firm enough to reveal the marbled appearance and the dirty red color of hæmorrhagic infarction, which latter was imbedded in its center. On the surface of the posterior lobe, close to the diaphragm, a hard nodule, the size of a hen's egg, flattened, was seen pushing out a little above the level of the surface. On pressure between the fingers it seemed as firm as a tubercle, but after cutting through its wall (which was half an inch in thickness composed of dense fibrous tissue) we found a small piece of necrosed lung, still showing the interlobular fibrous bands and entering bronchi and blood vessels, whilst a portion of it had degenerated—undergone caseous degeneration—and calcareous transformation was taking place. This cyst originally must have been very much larger, but had now become contracted to its present small size, and was gradually assuming the nature of an encapsuled calcareous tubercle. No abnormal amount of serum was present in the thorax. It is reasonable to believe that this cow became infected by the Tripp bull when he served her, and if this is true she had been suffering 227 days, including the incubative stage. This cow being thus early contaminated may be, and probably is, at least one of those which contaminated the remainder of the milch herd. We will see that the cow which stood next to her (No. 38) was also served by the Tripp bull two days later, and that No. 37 was the second animal which died, although it is impossible to tell how long No. 37 suffered with the disease.

Old Bull (No. 43), aged five years.

March 4.—Imperfect mobility of the chest walls and quickened respiration attracted my attention to him. Before examining him closely, I asked Mr. Gilmore if this animal had been used for service regularly, and he answered, saying, "This bull has done all the service for our milch herd with the exception of two, which were served by the young bull, and we use him every week right along." He further stated that he never heard him cough, nor had he noticed any sign of sickness or of unwillingness when he was used for service. His coat was smooth, he was in very fair order, and appeared to eat and feel well—so well, indeed, that we could not get near him in the field. When he was brought to the barn in the evening I found his temperature 99°, respiration 24. Auscultation on the right side failed to reveal the slightest respiratory murmur behind the shoulder; percussion failed to produce a resonant response over any portion of the posterior lobe. Yet this animal appeared to enjoy the most perfect health. I thought as he was not suffering any apparent pain he would do to keep for a surprise party.

March 10.—Temperature, 99°.5; respiration, 24. Eats and feels well. Physical examination reveals the same condition as before. I killed him before the legislative committee.

Autopsy.—Firm fibrous pleuritic attachment of the whole of the posterior lobe of the right lung to the chest wall, weighed fully 40 pounds. On making an incision through the center a cyst, 10 by 14 inches, inclosing an enormous mass of necrosed lung, was laid open. It contained about one quart of dirty gray liquid. Large branches of the bronchus which were occluded extended into the cavity and into the dead structure. The necrosed part was very firm and presented the characteristic pathological appearance of the lung plague. This case demonstrated the insidious, latent, and deceptive character of this malady.

Shorthorn Cow No. 46.

March 6.—Temperature, 104°.2; respiration, 20. Bronchial wheezing over the center of the right lung. Posterior half of left lung dull on percussion and absence of murmur. Milk secretion diminished. Eats her feed slowly, coughs excessively.

March 7.—Temperature, 105°.2; respiration, 26. Yields half the quantity of milk she did two days ago.

March 8.—Temperature, 105°; respiration, 30. Loud bronchial ronchus is heard on the right side. A prominent rattling sound can be heard at expirations at some distance away from the animal. Two-thirds of the posterior part of left lung is impervious to air, and strong percussion causes pain.

March 9.—No noticeable change. Killed her in the presence of Hon. N. D. Thurmond (the representative for Callaway County in the State legislature), the asylum physicians, and a number of prominent stockmen of the county. The central portion of right lung presented evidences of subacute bronchitis, and there was considerable frothy sputa in the large bronchial tubes. No effusion in the chest, nor consolidation of lung tissue. The left lung was attached to five ribs and the diaphragm by partially organized fibrous tissue, but the attachments were easily broken by the fingers. Cutting the lung into two parts three stages of disease became manifest; centrally and inferiorly a cluster of lobules 2 inches in diameter had that peculiar brownish-red appearance denoting hæmorrhagic infarction and the near approach to necrosis, while they were surrounded by thick bands of coagulated or gelatinized lymph. Other portions of the lung indicated a later invasion or stage of disease, by the color of the lobules, and the softer jelly-like lymph in the interlobular spaces. The superior half of the diseased portion presented evidences of very recent attack, as shown by the œdematous effusion in the lymph spaces, and the magenta or bright red color of the lobules as well as the greater elasticity of the diseased structure. The pleura was not much affected in this animal, with the exception of the local circumscribed place where the attachments had taken place. No abnormal amount of effusion in the thorax.

Large dry cow No. 13.

March 7.—Temperature, 101°; respiration, 14. Hair lying down smooth. In good flesh; never missed a feed, and in fact one of the best and healthiest appearing cows in the barn. Ausculation and percussion revealed dullness and absence of murmur over the whole posterior portion of the left lung. Killed for examination. Present Professor Sanborn, Drs. Smith, Tichenor, Young, Howard, and Herndon.

Autopsy.—The pleura pulmonalis and costalis over the greater portion of posterior portion of left side were so firmly united by fibrous bands that they had to be dissected apart with the scalpel; the posterior wing of the lung was united to the diaphragm by fibrous tissue bands which, from the indication of their pinkish color, contained capillary blood vessels passing from one thickened membrane to the other. The surface of the lung described an oval form, was extremely heavy, and after being removed from the chest and laid open with the knife contained a mass of necrosed lung fully 6 by 12 inches in size; the anterior part of it was commencing to disintegrate and liquify, whilst the posterior portion was firm. On slicing the dead lung into pieces half an inch thick the perfect form was retained and was solid as cold pressed beef; it retained the marbled appearance most beautifully. The wall of the cyst was from one-quarter to one-half inch in thickness, and possessed almost the density of cartilage. In the right lung several isolated lobules were in a state of collapse. No abnormal quantity of serum in the chest cavity.

Cow No. 40.

March 16.—My attention was called to her by Mr. Gilmore, who said she had a bad cough and did not eat all her feed during the night, and that she had been falling away in flesh rapidly for the past week. Temperature, 104°; respiration, 24. Auscultation and percussion revealed the posterior portion of left lung to be affected.

March 18.—This day the board of managers met and organized for the ensuing year, and as I was anxious to obtain their consent to the slaughter of the whole herd, I felt it necessary to demonstrate to them the nature of the disease, and I received permission to kill this animal for that purpose. I pointed out to them several others which would show plain evidences of the affection, but as this was the nearest to an acute case in the barn, I ordered her to be killed.

Autopsy.—We found all of the posterior wing of the left lung greatly hepatized and engorged with lymph exudate. This case, too, presented three well-marked phases of the disease, and while the earlier invasion must have been at least a month old, the last was only of a few days' standing. About 1 gallon of liquid escaped from the chest when cut open. No adhesions had yet taken place. The board was satisfied, and consented to authorize Superintendent Smith to order the destruction of the whole herd, provided the attorney-general said they had a right to confer this decree. They also thought it advisable to employ an expert (who had no connection with the Bureau of Animal Industry) to confirm the diagnosis. Hence, Dr. E. T. Hagyard, of Lexington, Ky., was sent for.

Cow No. 56.

March 18.—Temperature, 102°.2; respiration, 30. Does not eat well to-day, and coughs very much. Posterior lobe of right lung affected.

March 21.—Temperature, 102°; respiration, 36. Appetite suspended. A delegation of stockmen from the Kansas City Stock-Yards, consisting of A. B. Matthews, Capt. J. H. Payne, and Mr. Powell, of the Live Stock Board, accompanied by C. M. Lackland, of Mexico, Audrain County, with Veterinary Surgeons Adair, Bates, and Dundas, arrived for the purpose of discovering the true nature of the disease existing here. They were shown every facility for examination, and to convince them I had this cow killed (No. 56).

Autopsy.—Posterior lobe of right lung adherent to three ribs and the diaphragm. About 2 quarts of serum was contained in the chest. After removing this lung and viewing the beautifully mottled surface, we divided it into several parts and discovered three stages of invasion. A triangular portion in the center of the lung was a very dark red, almost black, with distinct and abrupt borders. Posteriorly to this we saw the finely marbled—gray, yellow, and purple—appearance, which was firm, and when cut into was dense and compact. Superiorly and anteriorly very recent invasion had set in; it was very œdematous, and when cut through by the knife serum of a clear light straw color flowed from the wound profusely. The characteristic conditions here presented convinced the whole delegation that this was indeed genuine contagious pleuro-pneumonia, and not tuberculosis, as they expected to demonstrate to us when they came here.

Queenettes Duke No. 1.

March 22.—This day, Dr. Hagyard having arrived, we decided on destroying the Tripp bull, Queenettes Duke; present, Drs. Hagyard, Adair, Bates, Dundas, and Drs. Smith, Tichenor, and Young, and about fifty of the town people.

Autopsy.—Strong fibrous bands and filaments attached to the superior border of the left lung and to the neck of four of the ribs held the lung suspended; these bands were 3 inches in length. At the supero-posterior border of the lung a few delicate fibrous filaments formed attachment of the lung to the surface of the diaphragm. The anterior portion of the left lung, where it rests against the anterior mediastinum, contained four cysts, the largest one 2 inches in diameter, which still contained a small piece of necrosed lung tissue, showing, when divided, the marbled appearance and the occluded vessels and bronchi. The three remaining cysts were smaller in size and their contents had undergone caseation. In the extreme anterior portion of the chest cavity a flattened piece of lymph exudate remained, which had a honey-combed appearance and closely adhered to the parietal pleura. This, to all who witnessed the previous examinations, and to those who were acquainted with the pathological anatomy of the lung, was sufficient evidence to prove conclusively that this animal had suffered from the lung plague many months ago.

Cow No. 15.

At four different examinations this animal registered a temperature ranging from 99°.5 to 101°; respiration, 20; cough very frequent; she was the wildest cow in the barn, and the champion kicker of them all.

Autopsy.—Left lung attached to three ribs and the diaphragm; contained a cyst 4 inches in diameter which inclosed necrosed lung. The anterior lobe of right lung was attached to the third and fourth ribs, and inclosed a piece of necrosed lung 3 inches in diameter.

Cow No. 44.

Cyst, inclosing dead lung structure, 4 inches in diameter in the posterior-inferior part of left lung.

March 23.—I tested the temperature of all the remaining cows in the barn, and they registered as follows: No. 38, 101°; No. 6, 102°.5; No. 49, 101°.5; No. 21, 102°.5; No. 22, 102°; No. 47, 102°.5; No. 33, 102°.2; No. 48, 101°.5; No. 29, 102°; No. 32, 102°.2; No. 41, 103°.5; No. 20, 101°.2; No. 4, 100°; No. 5, 102°; No. 53, 103°; No. 45, 102°; No. 50, 101°.5; No. 18, 101°.5; No. 54, 102°; No. 55, 103°.2; No. 52, 101°.5; No. 51, 102°.2; No. 34, 103°; No. 35, 101°; No. 36, 102°.2; No. 9, 101°.5; No. 11, 102°.5.

Cows killed March 27.

No. 45.—*Right lung:* Vesicular emphysema. *Left lung:* Hepatized lobules.

No. 47.—*Right lung:* Red hepatization in several places. *Left lung:* Normal.

No. 38.—*Right lung:* Posterior lobe attached to ribs, diaphragm, and mediastinum. A large cyst in superior-posterior portion containing necrosed lung. *Left lung:* Pleuritic attachment to ribs and diaphragm. Encysted dead lung in several places in the posterior portion of the lung. This cow was served by the Tripp bull July 28, 1884, and suffered an abortion February 27, 1885.

No. 50.—*Right lung:* Adhesion to ribs and diaphragm. Cyst in posterior border, containing necrosed lung. *Left lung:* Red hepatization in spots.
No. 18.—*Right lung:* Normal. *Left lung:* Red and gray hepatization posteriorly.
No. 54.—*Right lung:* Circumscribed hepatization. Effusion. *Left lung:* Normal.
No. 55.—*Right lung:* Normal. *Left lung:* Hepatized lobules posteriorly, and tubercles in the anterior portion.
No. 49.—Healthy.
No. 48.—*Right lung:* Adhesion to four ribs, and encysted dead lung in its center. Considerable effusion in the chest. *Left lung:* Normal.
No. 51.—*Right lung:* Encysted dead lung structure in the central portion of the posterior lobe. *Left lung:* Pleuritic adhesion to diaphragm. No consolidation.
No. 33.—*Right lung:* Circumscribed red hepatization. *Left lung:* Normal.
No. 36.—*Right lung:* Normal. *Left lung:* Adhesion to ribs; encysted lung in the anterior part. The walls of the cyst very thin, and the contents about to form an exit into the trachea.
No. 4.—Healthy.
No. 5.—*Right lung:* Slight lobular hepatization. *Left lung:* Normal.
No. 6.—Encysted lung on both sides, and visceral pleura of both sides firmly attached to the mediastinum and pericardium.
No. 22.—Healthy.
No. 9.—*Right lung:* Two cysts in anterior lobe and posterior lobe attached to ribs.

CALVES FROM TWO TO SIX MONTHS OLD.

I.—*Left lung:* Attached to the ribs; the pleura-pulmonalis one-quarter inch in thickness; considerable serum in the chest in which floated flocculi of lymph. The center of the lung contained a large cyst inclosing dead lung structure. *Right lung:* Normal.
II.—*Left lung:* Hepatization and infarction in the posterior portion. *Right lung:* A few congested lobules.
III.—*Left lung:* Marked adhesion to ribs and effusion into the chest. *Right lung:* Normal.
IV.—*Left lung:* Pleuritic attachment to ribs; serum and coagulated lymph in the cavity; two-thirds of the lung consolidated and very finely marbled in appearance; lymphatics (bronchial) very much enlarged. *Right lung:* Anterior lobe hepatized and serous effusion into the cavity.
V.—*Left lung:* Adhesion to ribs, and cyst in center. *Right lung:* Hepatized in spots and emphysematous.
VI.—*Left lung:* Posterior third hepatized. *Right lung:* Normal.
VII.—*Left lung:* Atelectasis and emphysema (vesicular). *Right lung:* Atelectasis, and emphysema (vesicular).
VIII.—*Left lung:* Lobular red and gray hepatization; several minute abscesses. *Right lung:* Hepatized lobules, also cyst containing dead lung.
IX.—*Left lung:* Attached to ribs; large cyst containing necrosed lung beginning to liquify. Effusion in chest. *Right lung:* Normal.
X.—*Left lung:* Normal. *Right lung:* Hepatized lobules.

Cows killed March 28.

No. 35.—*Right lung:* Anterior lobe infiltrated, very recent. *Left lung:* Normal.
No. 41.—*Right lung:* Normal. *Left lung:* Hepatized, and considerable pleuritic effusion.
No. 11.—Healthy.
No. 20.—*Right lung:* Attached to diaphragm; very large cyst in posterior lobe containing necrosed lung. *Left lung:* Many congested spots, which bled freely when cut.
No. 21.—*Right lung:* Normal. *Left lung:* Ecchymoses under the pleura, parietal and visceral.

TWO-YEAR-OLD HEIFERS.

(*a*) *Right lung:* Attached to ribs, and contained an old cyst. *Left lung:* Circumscribed hepatization, 2 inches in diameter.
(*b*) Healthy.
(*c*) *Right lung:* Atelectasis and pleuritic ecchymoses. *Left lung:* Atelectasis and pleuritic ecchymoses.
(*d*) *Right lung:* Lymph exudate underneath and thickening of the pleura pulmonalis. *Left lung:* Posterior portion hepatized, and contains several small abscesses.
(*e*) *Right lung:* Whole posterior lobe attached to the ribs, and anterior portion of it to the pericardium; contained an old cyst with necrosed lung. Considerable serum and coagulated lymph in the cavity. *Left lung:* Normal.

(*f*) *Right lung:* Hepatized lobules in the central part. *Left lung:* Normal.
(*g*) Healthy.
(*h*) *Right lung:* Beautifully marbled on the surface, and extensively infiltrated. *Left lung:* Beautifully marbled on the surface, and extensively infiltrated.
(*i*) *Right lung:* Normal. *Left lung:* Infiltrated with lymph of an opaque or smoky color. Pericardial fluid in excess.
(*j*) *Right lung:* Anterior lobe almost completely collapsed; posterior lobe ecchymosed on the surface. *Left lung:* Normal.
(*k*) *Right lung:* Normal. *Left lung:* Small portion hepatized; slight effusion in chest.
(*l*) *Right lung:* Congested in the center, and isolated lobules collapsed. *Left lung:* Normal.
(*m*) *Right lung:* Anterior lobe hepatized; pleuritic effusion. *Left lung:* Normal.
(*n*) *Right lung:* Normal. *Left lung:* Lobules collapsed in many places.

YEARLING HEIFERS.

(*o*) *Right lung:* Posterior wing slightly attached to diaphragm. *Left lung:* Normal.
(*p*) *Right lung:* Congested. *Left lung:* Marbled and infiltrated with lymph.
(*q*) *Right lung:* Two congested spots. *Left lung:* Normal.
(*r*) *Right lung:* Infiltrated, and consolidated lobules. *Left lung:* Normal.
(*s*) Healthy.
(*t*) Healthy.
(*u*) *Right lung:* Infiltrated in center. *Left lung:* Infiltrated in lobules.
(*v*) *Right lung:* Abscesses in two places and another forming. *Left lung:* Thickening of pleura costalis.
(*w*) Healthy.
(*x*) Healthy.
(*y*) Healthy.
(*z*) *Right lung:* Posterior lobe adhered over a large portion to the ribs, and contained a very large cyst filled with well-preserved necrosed lung. *Left lung:* Thickening of pleura, and effusion.
(*&*) Healthy.

March 31.—Killed the remaining 5 cows before the cattlemen's meeting, held on this day at Fulton.

No. 52.—*Right lung:* Anterior lobe slightly infiltrated. *Left lung:* Hepatized at posterior wing.

No. 29.—*Right lung:* Normal. *Left lung:* Small cyst above the heart containing necrosed lung; considerable pleuritic thickening; coagulated lymph in the cavity.

No. 34.—*Right lung:* Posterior border attached to diaphragm, and half of the posterior lobe hepatized. *Left lung:* Normal.

No. 32.—*Right lung:* Large cyst, 4 inches in diameter, inclosing dead lung undergoing liquefaction in the center of posterior lobe. *Left lung:* Hepatized anteriorly.

No. 53.—*Right lung:* Anterior lobe contained large cyst, and was attached to three ribs. *Left lung:* Posterior two-thirds firmly attached to the chest wall by fibrous tissues, and the lung contained a piece of necrosed structure encysted which measured 8 by 12 inches.

Dr. A. A. Holcombe, State veterinarian of Kansas, was present, and assisted at the examinations of the 27th and 28th.

Mr. A. I. Owens, who joins farms with the asylum farm, kept a number of cattle during the fall and winter, and owing to poor fencing his cattle were allowed to run with the asylum herd, and hence had every facility for contracting the disease. On the 26th I went to Mr. Owens' place to examine his cattle, and I found a number of the 18 head which he owned affected. Therefore, on the 31st, he brought one of them to the place of slaughter at the asylum to have her killed and examined. After killing the last of the asylum herd we destroyed his cow, a thoroughbred shorthorn.

Autopsy.—The left side of the chest contained a half a gallon of serum, and the posterior border of the lung was attached to the diaphragm, and the posterior third of the lung was very dense and heavy with organized lymph exudate into the interlobular spaces. In making sections of the diseased structure the marbled appearance was firmly marked. The right lung was but slightly affected.

I ought to state here, in order to finish the relation of the number of deaths in the asylum herd, that Mr. Gilmore told me they lost 3 of their young calves last fall, in November, as near as he could remember, which had been in the calf pasture at the time the young bull grazed in it, in July and August. They naturally believed that they died as calves will frequently die. It is probable, however, that they also died with the lung plague. Not including these calves, there died and were killed 84 head, of which the large number of 73 were found diseased, or the enormous percentage of 86.

The prevalence of this disease caused much excitement among the cattlemen of Missouri, and a meeting was at once called to devise ways and means for its suppression. The following is the published call for this meeting:

"*To the cattlemen of Missouri:*

"Whereas contagious pleuro-pneumonia is known to exist among the cattle at the lunatic asylum, Fulton, Mo., and as many of the town cows and cattle on adjoining farms have been exposed to contamination, therefore, we, the committee appointed at a local meeting held at Fulton, Mo., on the 14th instant, desire the attendance of the stockmen of the State at the city hall, Fulton, Mo., at 11 o'clock a. m., March 31, 1885, for the purpose of instituting measures for the prompt suppression and stamping out of the disease wherever it may be found to exist within the State outside of the State lunatic asylum herd.

W. F. NESBIT.
J. L. ERWIN.
J. E. SALLEE."

In pursuance of this call a large number of cattlemen and others interested met in the city hall in Fulton promptly at 11 o'clock a. m. on Tuesday, March 31, 1885. Governor Marmaduke, Congressman Bland, Dr. Young, Register of Lands McCulloch, and other preminent gentlemen from different sections of the State, impressed with the importance of extinguishing this insidious and destructive disease, were present to lend the benefit of their wisdom and suggestions. The call was read by Mr. J. L. Erwin, after which Hon. R. P. Bland, member of Congress, was elected chairman. On taking the chair, Mr. Bland addressed the convention at considerable length on the importance of prompt and effective action for the suppression of the plague which had found a lodgment among the cattle of this locality. He alluded to the laws passed by the legislatures of the Eastern States where this malady prevailed, and also to the action taken by Congress. These laws were all, he said, radically defective, in that they failed to make adequate provision for remunerating property-holders for the loss of cattle it might be found necessary to kill to prevent infection.

Upon the conclusion of Mr. Bland's address, J. F. Lewellyn was chosen secretary. T. B. Harris then moved that J. I. Nichols, of the *Gazette*, and R. M. White, of the Mexico *Ledger*, be also elected, and Mr. J. L. Erwin added T. Benton Taylor, of the *Telegraph*.

Dispatches and letters were then read from Congressman Hatch, Governor Coleman, Mr. Matthews, and others, expressing their sympathies with the purposes of the convention and regrets at their absence.

Dr. A. A. Holcombe, State veterinary surgeon, of Kansas, was present in an official capacity, and at the request of the convention, spoke briefly. He said upon the action of the convention depended the course to be adopted by the State of Kansas. There could be no doubt of the prevalence of pleuro-pneumonia in the immediate vicinity of Fulton, and that unless efficient measures were adopted and immediately executed for the suppression of the disease, the State of Kansas would establish strict quarantine against the State of Missouri; that it had both the power and the money to enforce it, and that it would inflict incalculable injury upon this State. He urged that the disease be eradicated now and forever by the use of all available means in the power of the convention. The interests at stake were too large to be trifled with.

A motion was then made to appoint a committee of five to report what methods are necessary to eradicate the disease at once. This was composed of J. L. Erwin and N. D. Thurmond, of Callaway, Mr. Lackland, of Mexico, Dr. Harkness, of Saint Louis, Dr. Holcombe, of Kansas, and Hon. R. P. Bland, of Laclede County.

A second committee of like number was also chosen to inspect the killing of 5 remaining cattle of the asylum herd, reserved for this purpose, and report to this convention. This consisted of Dr. Robert Baker, Dr. Crawford, and J. F. Lewellyn, of Mexico, James Parker and Mr. Bradford, of Boone.

The convention then adjourned until 2 o'clock to give the committees and members of the convention an opportunity to witness the slaughtering of the cattle and make up their reports. It did not reassemble, however, until 4.30 o'clock in the afternoon.

On reassembling Mr. Thurmond presented the following report of the committee, which was adopted, and embodies the action of the convention:

"REPORT OF COMMITTEE.

"Your committee, to whom was referred the question of devising means for exterminating the cattle plague known as contagious pleuro-pneumonia, now existing among the cattle of Fulton and vicinity, beg leave to report that they have considered the same and offer the following as their report:

"(1) All cattle that have been exposed directly or indirectly to the asylum cattle, and that show any indications of having the disease, should be killed as speedily as possible.

"(2) All animals, whether diseased or not, that have come in contact with diseased cattle, should be killed.

"(3) Parties whose cattle are killed to prevent the spread of the disease should be paid for all cattle killed such a price as may be agreed upon by the owner and the executive committee hereinafter provided.

"(4) A committee of three or more discreet persons, to be known as the executive committee, should be appointed to fully investigate and report upon all cattle or herds that have been exposed to the disease, and all the facts pertaining to such cattle or herds should be recorded by the committee and kept for the inspection of all persons interested.

"(5) For the purpose of carrying out the aforesaid provisions, as large a sum of money as practicable should be raised by subscription, which said money should be placed in the hands or at the disposal of a committee, termed the finance committee, whose duty it shall be to raise and keep said money for the purpose aforesaid.

"(6) The executive committee shall inspect all animals suspected of having the disease, and shall have full power to do all things herein provided; shall appraise all animals killed, both their value as sound and as diseased, and shall keep said appraisements separately and shall keep a full and complete record of all matters done by them, and shall draw upon the finance committee for all sums of money ordered to be paid for animals killed. Said committee shall see that the quarantine law of the State is fully enforced against all parties whose cattle are diseased or who do not allow their cattle to be killed as aforesaid."

The following gentlemen were appointed an executive committee, viz: Charles A. Bailey, Sisera Threlkeld, and John L. Erwin of this county.

The following finance committee were selected: John L. Erwin, William Harrison, and Dr. C. Black, of this county; A. A. Walker, T. J. Wallace, J. B. Bronough, and Charles Lemond, of Cooper County; Alex. Bradford, of Boone; A. T. Atwater and Webb Samuel, Saint Louis; A. B. Matthews, Kansas City; and C. M. Lackland, of Mexico.

The committee appointed to witness the killing of diseased animals, reported that 5 of the asylum herd, and an animal belonging to the herd of A. I. Owens, had been killed in their presence, and all had been found affected with lung plague.

The following resolution was offered and adopted:

"*Resolved*, That the governor of Missouri and our Representative in Congress, R. P. Bland, be requested to correspond with the United States Commissioner of Agriculture and secure his co-operation, as far as practicable, in stamping out the contagious pleuro-pneumonia in our State."

Mr. Erwin then proposed that the subscription to the fund for paying for the animals killed be inaugurated at once. He headed it with $100, which was quickly supplemented by nine other gentlemen giving $900. The Callaway Savings Bank gave $250, and, with other small amounts, made the aggregate $2,500.

After the convention adjourned on Tuesday afternoon a large concourse of people met in the hall for the purpose of enlarging the subscription and giving prompt efficacy to the work of the convention. Governor Marmaduke was present and delivered a very forcible and vigorous address, which gave very general satisfaction. He showed conclusively the uselessness of calling an extra session of the legislature and the danger and illegality of appropriating money for the payment of cattle destroyed because infected with a contagious disease. He cordially indorsed the plan adopted by the convention, and thought it would fully meet the requirements of the present exigency, and showed his faith in it by subscribing $100 towards the suppression of the disease. He likewise intimated that, inasmuch as the State had been instrumental in introducing the disease, that the legislature would be generous enough to reimburse those individuals who had suffered loss. Mr. Bland and others made addresses of great practical value and contributed in the same generous manner.

On April 1 the executive committee appointed for the purpose, consisting of Charles A. Bailey, Sisera Threlkeld, and John L. Erwin, appraised the cattle owned by Mr. Owens, and we killed them, 17 head in all. Present, Governor John S. Marmaduke, Dr. Young, of Jefferson City, and many others. It began to rain about the time we commenced the examinations, and we only examined 7 of them. These all showed very plain evidences of the disease, with but one exception. Two of them had encysted necrosed lung, and others pleuritic effusion, pleuritic attachments, and consolidation of lung structure.

Mr. A. S. Owens sold 4 steers (two-year olds) to Frazer Nesbitt, who lives 2½ miles south from Fulton, on the 15th of January. One of them was very fat on the 3d of April, and I advised to bring him to the city slaughter-house, have him killed for beef, and if the lungs were perfectly healthy the flesh could be sold. This was done, and the animal proved perfectly healthy. On the 4th of April I went to his farm, accompanied by the executive committee, and examined the remaining three

of the Owens' cattle. I detected some abnormal sounds in the lungs of two of them, therefore concluded to have them appraised and killed.

Autopsy.—Two of them presented collapsed lobules and hepatized spots in the lungs, the size varying from one-half to 3 inches in diameter. The third one, in addition to collapsed spots, had several very small abscesses in the anterior lobe of right lung. There had been no elevation of temperature nor cough present. These 4 steers had been exposed to 14 others, but Mr. Nesbitt had taken the precaution to separate them two weeks previously. For the purpose of guarding against all danger of contamination, he built an inside fence to inclose the 14 head, so they could not come within 500 yards of his other cattle or the public highway. On the 23d of July, I again visited Mr. Nesbitt. The cattle were still in the double-fenced field, and were perfectly healthy.

Mr. Owens sold to Jack Muir, who lives 5 miles northeast of town, 3 head of calves on the 8th of March (according to Muir's statement, on the 16th of February). April 6, accompanied by the executive committee, we proceeded to Muir's place and killed these calves, which looked thrifty and healthy to all outward appearances.

Autopsy.—In all three we found congested and hepatized lobules, in one of them slight interlobular effusion had taken place, and the blood vessels and bronchi entering the diseased structures were partially occluded; a very few minute abscesses were present in one.

Mr. Muir had 17 head of other cattle with which these had been feeding. I did not believe the disease in the calves was far enough advanced to have communicated it readily to the others, and as Mr. Muir was very loth to part with all of his cattle—promising faithfully to use all precaution possible to prevent commingling with other cattle—we therefore concluded to keep his herd under close observation for a while. Dr. Michener, I believe, visited them several times subsequently, and I saw them again on the 27th of July. But subsequently to my last visit Mr. Muir had sold 7 of them to the butcher, and had bought 7 to replace them. At this, my last visit, I found all of his cattle in good health and free from disease.

Mr. Owens sold to Thomas Gallagher, who resides 8 miles east from town, 3 yearling steers, on the 5th of March. On April 13, accompanied by the executive committee, we visited Gallagher's place, appraised, and killed the 3 head.

Autopsy.—One was healthy. The lung of the second was considerably hepatized in the posterior wing of the right lung; the pleura pulmonalis was thickened by infiltration, and a pint of serum was contained in the chest cavity. The lung of the third one was emphysematous. Mr. Gallagher had 12 head of cattle with which these had been running, and I advised the committee to appraise them and have them destroyed. This was accomplished. No autopsy.

The number of animals exposed to the Gallagher cattle, were: Frank Smith, 5; Mr. Christopher, 2; Willis Dearing, several; Mr. Callicote, 2; James B. Smith, 2; Mr. Glover, 1; Mr. Garrett, 6; Mr. Lawrence, 7; Mr. Sigmond, 8. These cattle had not been with the Gallagher stock for any length of time, only as they might meet on the road. I examined the majority of them, but failed to find any indication of disease. However, we intended to keep them under surveillance.

Mr. Ballinger, a neighbor to Mr. Owens, had 2 cows which were with the latter's cattle about Christmas. I examined them on the 13th of April, and found them well.

J. L. Erwin purchased a cow from Owens last September. Mr. Erwin killed her in March and found her healthy.

I. H. Dunham had 13 head exposed to Owens's cattle. He joins farms with the latter. I examined them on the 8th of April, and found 3 which showed suspicious symptoms. We separated them from the rest, and on the 15th of April, in company with Dr. Michener, made a re-examination, but failed then to discover any evidence of disease. On the 28th of July I saw them again, and they were in good health. These are all the cattle, so far as we know, which have been directly exposed to the Owen cattle.

L. W. McSchooler, of Holt's Summit, purchased a bull calf last November from C. O. Atkinson, out of the asylum herd. It died about the 1st of March. The hired man living on McSchooler's place said "the calf did not do well for a month before it died; it had grunting spells, and coughed some. Three days before it died it quit eating, breathed very short, and groaned. After it died I opened it, and found slimy water in the lungs, and the lungs looked red and blue in places."

On the 3d of April I visited Mr. McSchooler's place and examined his 5 remaining cattle. I could detect no positive evidence of lung disease, but the roan and spotted cow coughed occasionally. Dr. Michener examined them subsequently and found them healthy; he, and the executive committee, killed the most suspected one, and found her free from the lung plague. This one animal sold to McSchooler was the only one sold out of the asylum herd since the arrival of the Tripp bull.

H. S. Hughett, a carpenter at the asylum, had 1 cow and calf which ran in the road part of the time, and several times was with the asylum cattle. In October she was heard to have a cough, which gradually increased in frequency; she would fall

off in her yield of milk for a day or two without showing any signs of sickness, and then gain in milk again; 3 days before she died she rapidly fell away in flesh, and her milk secretion diminished from 3½ gallons a day to 1 quart. She became very weak, and died on the 8th of November. The calf was sold in the month of September to Mr. Holmes, of Ham's Prairie. Mr. Hughett is a very intelligent man, and I think the history he gave me is reasonably accurate.

Robert Kibby, a colored man living in town, had one cow, which passed the road along the asylum farm almost daily. I was told she was sick on the 7th of March. I immediately went to Kibby's house to see her. Mrs. Kibby told me that about four weeks ago her cow was suddenly taken sick, so she quit eating, laid down frequently and moaned; she also had some cough. They attributed it to falling on the ice. After three days she began to eat again, but has had a cough ever since her sickness. I examined the cow. She was miserably poor; coughed twice during my examination; temperature, 100°.5; slight dullness on the right side, and crepitation and abnormal resonance on the left. I examined her again March 12 and 30, but could not positively decide whether she had been affected with pleuro-pneumonia and was recovering or whether she was consumptive. We tried to buy her by private subscription, but Mr. Kibby wanted $60 for her. On the 15th of April the executive committee purchased her, and Dr. Michener and myself made a *post-mortem* examination. We found adhesions of the anterior part of left lung to two ribs by fibrous bands. In the posterior lobe of the right lung we found two sections where the lobules were in a state of collapse. The pleura pulmonalis over the posterior wing was thickened and leathery.

Mr. D. Petrie, whose farm adjoins the asylum farm, had 8 head of cattle, which were exposed to those of the asylum. Dr. Michener, accompanied by the executive committee and Dr. G. C. Faville, of Colorado, and Dr. Paul Paquin, of Kansas City, visited this herd on the 15th of April, and found them diseased. The committee appraised one in order to obtain it for examination, to satisfy the owner, who was inclined to be skeptical, that the disease actually existed in his herd. This was a yearling calf.

Autopsy.—Two quarts of serous effusion in the chest; both lungs attached to the ribs, but the attachments were easily broken down; the external appearance of the lungs presented the pathognomonic mottled condition; the right lung was largely hepatized, and considerable lymph exudate and partial fibrous organization had taken place, whilst the left lung contained a large piece which showed the condition known as caused by hæmorrhagic infarction. In the afternoon the executive committee made the arrangement to kill the remaining 7 head, and took Dr. Faville along, who desired to make the *post-mortem* examination. In the evening he gave me the following report of the cases:

(1) One-year-old heifer.—Both lungs adherent to ribs and diaphragm; 3 quarts of effusion in the chest; thickening of pleura, and mottled in color; both lungs extensively hepatized; marbled appearance on section finely shown.

(2) Red spotted cow.—Right lung attached to ribs; pleura much thickened; two small cysts—the size of a walnut—containing semiliquid pus.

(3) Yearling steer.—Left lung attached to pericardium, and contained a cyst the size of a hen's egg, which inclosed necrosed lung; right lung emphysematous.

(4) Two-year old-steer.—Left lung hepatized.

(5). Two-year-old steer.—Pleura of the anterior portion of left lung thickened; evidence of lobular pneumonia in both lungs.

(6) Cow.—Posterior portion of the left lung hepatized, containing a small cyst; 2 quarts of serum in the cavity. Right lung hepatized posteriorly and attached to diaphragm.

(7) Cow.—Right lung had formed attachments; 2 quarts of serum in the chest; left lung was hepatized and marbled in the center, with thickening of the pleura.

Jefferson Williamson, residing 1½ mile south of town, had his 18 head of cattle in a lot last January, which joined a field owned by Messrs. Howard & Threlkeld, containing a number of the asylum herd. I examined his cattle on the 4th day of April, and found two of the cows with suspiciously high temperatures, viz., 102°.4 and 103° Fahr. Dr. Michener made subsequent examinations, and I re-examined them on the 28th of July, but found them perfectly healthy.

James Wood has 1 cow that pastured in adjoining lot wherein the Tripp bull was kept last fall, and was bred to him in October. I examined her on the 4th of April and again on the 28th of July, but failed to find any indication of disease.

Henry Nichols has 1 cow which pastured in a lot adjoining the quarantine lot of the Tripp bull, and it is believed she was served by him. I examined her April 4, and again July 28, but found her free from disease.

Mr. Shadrack, who adjoins the asylum farm and the Petrie place, has 1 cow. I examined her April 25, and again July 29, and found her free from disease.

Mr. Debo adjoins the asylum farm, and has 2 cows. I examined them April 25, again July 29, and found them healthy.

The property of the State Deaf and Dumb Asylum adjoins that of the Insane Asylum

on the north. I examined the cattle at this institution, numbering 25 head, on the 17th of March, but failed to find any evidence of disease. It is not known that any direct chance for contamination occurred, with the exception that one of the Deaf and Dumb Asylum cattle was bred to the old bull at the other asylum last August. Mr. Sheely, the superintendent of the Deaf and Dumb Asylum, kept a very close watch over his cattle, and this spring put up an inside fence within the pasture-field for the purpose of avoiding contact with town cows or other cattle going along the road. I saw the herd again on the 30th of July, but could not detect any evidence of disease.

On the 5th of April I was requested to go to Mr. L. Metz's place, 2½ miles west, to see a sick cow. I found her dead and buried when I arrived, but the owner had removed the lungs for my inspection. They were healthy, but having died a rather sudden death there was considerable hypostatic congestion, which appearance alarmed the owner.

On the 6th of April I went to Mexico, Audrain County, to examine a cow owned by Mr. C. J. McHatton, and to attend a meeting of the Audrain County cattlemen. Mr. McHatton moved from 3 miles north of Fulton to Mexico in the month of January, and took 1 Jersey cow with him. She never manifested any sickness, but the people were afraid she had been exposed and might spread disease before it could be detected by them. To make the diagnosis absolutely certain, I advised the stockmen to buy her and kill her for me to examine. They raised the amount required, purchased her, and killed her. I made an examination and found her lungs healthy. Another cow owned in Mexico had been moved from the town of Fulton in the month of February; she had been running with a number of the town cows. Soon after moving to Mexico she was taken sick with indigestion, and looked very poor when I saw her (April 6), but I could not detect any positive evidence of lung disease; but, as with the other cow, to be safe, I advised the same measures to be followed. She was purchased, killed, and found healthy.

These two were the only cattle in Audrain County, so far as we knew, upon which any grounds for suspicion rested, and by their removal and proof of freedom from lung plague, the citizens of that city and county could breathe easier, and they did feel relieved.

E. A. Minor, of Fulton, owns 1 cow. She was taken sick on or about the 8th of February, when she stopped eating, began to cough occasionally, and moaned considerably. After three days she began to improve, but suffered an abortion on the 25th of February. Since that time she has been eating well and gaining in flesh rapidly, but still coughs occasionally. On the 8th of March, Mr. Minor requested me to see her, stating that if she had the lung plague he was willing to kill her. I went with him and made a careful examination; her temperature was 102°.2, but auscultation and percussion were very unsatisfactory. She was then very fat and in such a condition I could not observe the sounds as closely as desirable. I requested him to keep her closely confined to his lot until I saw her again. I examined her again on the 18th, and at several subsequent times, but could detect no evidence of lung disease. I saw her at my last visit to Fulton, on the 28th of July, and found her fat and well. She had quit coughing in April.

John Lawther and James Walthall were trading extensively in cattle last fall and winter, and had a field which adjoined one belonging to the asylum. In this field they kept their feeding and selling stock; they furnished 7 fat cattle a week to the asylum for beef, and bought and sold among the farmers. The asylum field was used during the month of November by them to graze the milch herd during the day. Lawther & Walthall sold 1 cow to J. Gross, of Fulton, in the latter part of February. Two weeks after Mr. Gross received her she fell off in the yield of milk and began to cough. I examined her on the 19th of March, and discovered slight dullness over the lower part of right lung. I examined her again March 30, and at several subsequent times, but the changes in her condition were not marked. On the 4th of April we killed her, and found pleuritic adhesion of the lung to two ribs on the right side, with but very small amount of consolidation of the lung.

Mr. George Craig purchased 1 cow from Mr. Lawther on the 9th of March, and took her to his farm, 6 miles north of Fulton. On the 4th of April she was appraised and killed. On the surface beneath the pleura of the right lung I found several spots of congested and hepatized lobules; the pleura appeared somewhat thickened, and a slight effusion had taken place under the thickened membrane. Only 4 of the 90 head of cattle which Mr. Craig owned had been directly exposed to the Lawther cow. We requested Mr. Craig to keep the 4 head isolated from the rest of his cattle. On the 27th of July I revisited the place, and found them all healthy.

Lawther sold to J. L. Erwin, who lives 1 mile north of town, 1 cow on the 3d of February. Erwin placed her with the rest of his cattle (140 head). I examined her on the 14th of April, and found abnormal crepitant sounds and slight dullness on auscultation and percussion on the left side of the chest. Dr. Michener killed her on the 17th, and found a very slight diseased condition. She had a young calf, which was

sold, together with 21 others, to Jerry Muir on the 4th of March. I was at Erwin's place on the 25th of March and his cattle all appeared to be in good health then. After the Lawther cow was killed, and it was ascertained that she had been slightly affected with some lung disease—whether of a contagious character or not—it was, nevertheless, necessary for us to maintain a very close watchfulness over them. The finance committee did not have half enough money at their disposal to pay for so large and valuable a herd should it become necessary to destroy it for the benefit of the community. I saw the herd again on the 2d of May, and for the last time on the 27th of July. During the month of June Mr. Erwin sold 30 head to the butchers for beef. Mr. Lawther sold 1 cow to Mr. Herkenrath and 1 to Mr. R. Shields, both residing in Fulton; this sale was in the month of March. Both Dr. Michener and myself examined them several times, and on the 30th of July both cows were yet unaffected.

Lawther sold 5 calves last November to Mr. Hood, in Audrain County. I went to see them on the 1st of May, and found them healthy.

Lawther sold 18 head on the 7th of March to Cook & Houf, who live 5 miles north of Fulton. Dr. Michener examined them on the 18th of April, and advised the executive committee to order them killed. This order was fulfilled. On the 15th of April, in company with Dr. Michener, we examined the cattle on Lawther's farm, consisting of 24 two-year-old steers and 3 cows. With the exception of 4 of the steers, which had slight suspicious symptoms, we found them well. Dr. Michener examined these 4 head again on the 23d, and found that our suspicions had been unfounded.

On the same day (April 15) we examined 7 head belonging to James Walthall, the former partner of Lawther in the cattle trade, but discovered no evidence of disease among his stock.

On the 17th of April Dr. Michener visited the farm of Dr. E. M. Herndon, 4 miles northwest from Fulton. Mr. Herndon bred 1 cow to the "old asylum bull" early last fall. Soon thereafter he sent her out on the farm, where she remained alone up to this time. One of the neighbors (Mr. Fisher), who had cattle near by, said he heard her cough, and that he also began to hear a cough among his cattle. Dr. Michener killed the Herndon cow at the time of his visit, and found her affected with a slight bronchitis, with recent congestion, in a mild form, of one of the lungs. He also, on the same day, examined Fisher's cattle, but could not discover any lung disease among them.

April 16.—I examined the following number of town cows: William Lawther, 1 cow and calf, O. K.; Dr. Kerr, W. D. Kerr, and Dr. E. M. Herndon, 1 cow each, O. K.; Rev. W. H. Burnham, 1 cow, suspicious; J. W. Overton and C. C. Hurseman, 1 cow each, O. K.; A. G. Moore, 1 cow, suspicious; Kahner Cole, C. McIntire, J. D. Henderson, Dr. Baker, John H. Jamison, Martin Anderson, Mrs. Booth, and Mrs. Nickum, 1 cow each, O. K.; Jos. Bell, 2 cows, O. K.; Mrs. Bartley, cow and calf, O. K.; Mr. Horner and Mr. McGee, 1 cow each, O. K.; James F. Allen, 1 cow, suspicious; Mr. Bennett, 1 cow, O. K.; John Newcome, 1 cow, suspicious; John Newcome, 1 heifer, O. K.; Anderson Overton, 1 cow, O. K.; J. C. Renshaw, 1 cow, suspicious; George Derr, C. W. Samuel, John Pace, and Mrs. Hill, 1 cow each, O. K.; William Meyers, 1 cow, suspicious; William Meyers, 1 heifer, suspicious; Benjamin George, 3 cows, O. K.; Mr. Tucker, 1 cow, suspicious; William Tucker, 7 cows and heifers, O. K.; William Tucker, 1 yearling bull, O. K.

April 20.—Mr. Tuttle and Mr. Bain, 2 cows each, O. K.; Jos. Ticklin, 1 cow, O. K.; B. H. Charles, 3 cows, each O. K.; Frank Kibby, 1 cow, O. K.

April 21.—Thomas Harris, 2 cows, O. K.; J. B. Harris, 2 cows, O. K.; Colonel ——, Mr. Robbins, and Mr. Pollard, 1 cow each, O. K.; William Humphreys, 1 cow, suspicious; T. Henderson, Samuel Collyer, W. A. Gregory, Mr. Wiggs, Mr. McCracken, and W. D. Bush, 1 cow each, O. K.; E. Curd, 2 cows, O. K.; T. Basket, 1 cow, O. K.; Mr. Cruse, 3 cows, O. K.; Mr. Isham, 1 cow, O. K.; Rev. Miller, 2 cows, O. K.

On April 23 Mr. W. W. McKim, of Rich Hill Top, 7 miles north of Fulton, brought in two pair of lungs from cattle which were killed to-day. They were purchased this morning from James Craig by W. P. Wright, and driven into McKim's neighborhood. McKim and his neighbors believed them dangerous and shot them down, removed the lungs, and brought them to town for inspection. The lungs presented no evidence of disease whatever.

On April 24 I examined the herd of 40 head of cattle belonging to Charles A. Baily, one of the members of the executive committee. I found all of his cattle healthy.

Mr. Clay McClure, residing 4 miles northeast of Fulton, reported 1 of his cows sick. I drove out to see her, and after examination diagnosed an abscess in the liver, and prognosticated death in the course of the next twenty-four hours. My diagnosis and prognosis proved correct.

On April 27 it was reported that Fred. Bloom, 4 miles east of Fulton, had 2 sick cows. Dr. Michener and I went out to see them. We examined 7 head, but found no

cause for suspicion, excepting that 2 of them had a cough. We decided to see them again in the future.

We examined 19 head belonging to John Malone, 11 head belonging to Aug. Herman, and 3 head belonging to W. B. Snyder, all O. K.

After our return to town I examined the following number of town cows: Mrs. Winger, Mr. Renfrew, Julia Martin, George Kreuz, Mrs. Lendman, Hubbard Keller, H. Weigman, Samuel Blount, Gus Boeking, each 1 cow, O. K.

This ended my examination at Fulton for this time, and I left for Kansas City on the 28th. in accordance with your instructions. I left my notes made of suspected cases in the hands of Dr. Michener, who remained to continue the examinations and to watch future developments.

On May 14 a special dispatch in the Kansas City *Daily News* stated that pleuro-pneumonia had broken out in C. J. McHatton's herd at Mexico. I knew that if this were true several hundred head of cattle in the near vicinity must have been exposed; therefore I took the evening train to go to Mexico to investigate the matter. On my arrival at Mexico on the 15th I discovered that the report was a mistake. One cow, belonging to McHatton, died on the 13th, and several gentlemen who saw the lung taken from her jumped at the conclusion that she died with pleuro-pneumonia. A portion of her lung was taken to Fulton and inspected there by Dr. Michener, who failed to discover any evidence of that disease in them. I remained at Fulton over Sunday to meet Dr. N. H. Paaren, the State veterinarian of Illinois, Dr. A. O. Atkinson, the State veterinarian of Wisconsin, and Dr. Paul Paquin, the recently-appointed State veterinarian of Missouri. They were there to investigate as to the nature and spread of the disease. They expressed themselves well satisfied at the prompt manner in which it had been checked in its further extension. On the 18th I returned to Kansas City.

On July 22 I returned to Fulton to make a re-examination of the exposed cattle. I learned that many of the cattle had been fattened and sold to the local butchers for beef. I made diligent inquiries as to whether or not any cattle had been sick or had died since Dr. Michener had left Fulton, but could not hear of a single suspicious case. I examined all the cattle which had been exposed to the asylum herd by being in the adjoining pastures during the winter and spring. I examined 85 of the town cows; 70 head belonging to John Lawther, 4 miles from town; 20 head belonging to Cook & Houf, 3 miles north from town; 54 cows of John L. Erwin; 17 head of William Tucker; but failed to find any evidences of disease. Since that time I have been in correspondence with several gentlemen at Fulton, and as late as the 20th of September no disease had appeared. The last animals slaughtered were 14 head of the Lawther cattle, belonging to Cook & Houf, on the 18th of April. So we see that five months have elapsed since the last suspected cattle were killed; and, in the absence of any subsequent appearance of the disease, we can now feel reasonably well assured that it has been eradicated in Callaway County.

CATTLE WHICH GRAZED IN FIELDS ADJOINING THE ASYLUM FARM.

A. I. Owens on the east; Debo & Velte on the south; John Lawther on the north. In the month of November the milch herd of the asylum was pastured in a field north of the road which divides their farm; they were driven back and forth daily over this road, traversing a distance of 20 rods. Lawther's field adjoined this field north of the road, and all the opportunity Lawther's cattle had for direct contact with the asylum herd was while the latter were grazing there in the month of November. Many of the town cows traveled this road daily, going out further east to graze on an open section of land. In the month of January the yearlings and two-year-old cattle (22 head) were driven south about three-quarters of a mile and placed in a stalk-field, belonging to Howard & Threlkeld; they remained for a month and were then brought back and placed on the southeast meadow of the farm. While they were in this stalk-field Mr. Williamson's cattle were in a field adjoining.

The Tripp bull was taken south 1 mile and placed in a 20-acre lot on or about the 23d of August. In the center of this lot stood a small log barn, in which he was tied for about two weeks, and then allowed the run of the whole lot. While here Mr. Wood's cow was served by him. Mr. Wood's cow lot adjoined the bull lot on the north. Mr. Nichols' cow lot adjoined the bull lot on the south, and it is believed that Mr. Nichols' cow was also served by the bull. The bull lot adjoined the public road, and on this road 1 cow belonging to Milton Finley, and another belonging to Mrs. Bush, were in the habit of grazing during last fall. None of these cattle became affected.

This fact indicated to me that the Tripp bull was suffering with the disease in the stage when it is most favorable for transmission at the time, or very soon after, he reached Missouri, and at that time contaminated the asylum herd (previous to his isolation August 23). As the *post-mortem* examination proved that his lungs had not been extensively involved in the disease, the conclusion is that he soon passed

the acute stage and was perhaps incapable of communicating the disease as late as the 23d of August. It is my belief that he conveyed the disease to cows Nos. 38 and 39 at the time he served them—July 26 and 28—and that they in turn contaminated the rest of the herd, with the exception of the young calves, in whose lot he was kept from July 24 to August 23. These calves had no very close communication with the milch herd until cold weather set in. Now, with all the chances, directly and indirectly, for the spread of the disease among the cattle outside of the asylum herd, it does appear remarkable that no more cattle became affected, and that our work thus far has been so unusually successful. I can give four reasons for it:

(1) The asylum herd was well fenced in; the water and shade were one-quarter of a mile off from the public road and adjoining farms. During the winter all the cattle, except the 22 head, were housed in the barn eighteen out of the twenty-four hours.

(2) Owing to the severity of the winter, cattle would not be wandering away from home or their feeding places as they do in the summer time or in milder seasons. The action of the snow, freezing, thawing, rain, and sunshine would soon destroy the disease germs on the ground, fencing, &c.

(3) Before active movement of the cattle trade in the opening of spring, and before the cattle were turned out on the roads, we advised the community of the existence of the disease, and requested every one to keep their cattle strictly confined at home.

(4) By promptly killing all exposed cattle which manifested any evidence of lung disease without waiting for the development of a plain case. Wherever such killing was done, and the lungs presented any reasonably well marked evidence of being in the initial or the apparently recovered stages of pleuro-pneumonia, I unhesitatingly condemned all cattle with which they had been in daily contact. If the lungs only presented evidences of broncho pneumonia or lobular pneumonia I requested the quarantine of the remainder of the herd.

In the beginning of this work in Callaway County I met with considerable opposition. Many wanted to experiment, quarantine, and temporize in various ways; but I took another view of the matter. The disease exists no where in the State, or has ever before been known to exist outside of Callaway County. I regarded every suspicious case dangerous to the community and to the great cattle interests of the State, and therefore advised the most radical measures, and insisted on having them put into operation. I did not want a single animal which was now, or at any time had been, affected to escape the poll-ax, for I believe that great danger exists in allowing any so-called recovered animal to live and mix with other cattle. Under the conditions existing at Fulton, by the aid of a sufficient amount of money for the purchase of cattle necessary to be condemned, and the aid of an executive committee (to carry my instructions into execution), in which the people had confidence, I had sufficient faith to believe this disease could be stamped out, and thereby free the stock interests of the State from this dread incubus which rested upon them. I am happy to say that my plans were adopted, money was raised, an executive committee was appointed, composed of men whose integrity and faithfulness to the duty to which they were appointed could not be surpassed, and we killed, outside of the asylum herd, the following number of cattle, and paid therefor two-thirds of the assessed value:

Owner.	Date when killed.	Number of head.	Assessed value.
A. I. Owens	Apr. 1	18	$710 00
W. F. Nesbitt	Apr. 4	3	90 00
J. Gross	Apr. 4	1	35 00
George Craig	Apr. 4	1	37 50
Jack Muir	Apr. 6	3	57 00
C. J. McHatton*	Apr. 6	1	†100 00
Mrs. Douglass*	Apr. 6	1	†35 00
L. W. McSchooler	Apr. 10	1	50 00
Thomas Gallagher	Apr. 13	15	258 00
Robert Kibby	Apr. 15	1	35 00
D. Petrie	Apr. 16	8	160 00
Dr. E. M. Herndon	Apr. 17	1	100 00
J. L. Erwin	Apr. 17	1	35 00
Cook & Houf	Apr. 18	18	520 00
Total		73	2,222 50

*Killed at Mexico. †Paid by contribution.

ASYLUM BARN AND DISINFECTION.

This barn is built of stone, and is 48 by 72 feet. Above the stabling, as shown in the diagram, is a loft for hay and boxes for feed. The ceiling of the stabling is at least 12 feet high. There are three windows at each side and two at each end of the barn; two doors 10 feet wide at each end giving admission to the central floor, and two smaller doors at the east end to admit the cattle; in the passage between the two rows of cattle at each side of the barn are traps 2 by 2 feet, with plank covers, through which the litter is dropped in the basement below. The floor is of oak plank, and the whole stable and barn has been kept scrupulously clean. The ventilation is very good. The basement is 8 feet high, and in the winter time the calves and young stock have the use of it. The manure has been carted out once a month. After the herd was killed all the stalls were taken out, leaving nothing but the bare floor and the supporting studding. The loft was swept out, even to the cobwebs on the rafters; the basement was cleared of all litter and feed-racks, a good portion of the dirt bottom being taken up. Everything was closed up as tight as possible, and daily for one month a sufficient amount of sulphur was burned in the basement to fill the whole building with heavy fumes. Chloride of lime was then thickly scattered over the floors, from basement to loft, and lime wash, containing chloride of lime, was used to cover the walls, flooring, wood-work, and even the rafters above. The doors and windows were all opened, so that the air might have free access to all parts of the building. No cattle will be allowed to enter the barn before January 1, 1886. All of the fences around the barn, the cow lot, and calf lot have been taken away and burned, and new fencing will be put up when needed. The 84 head of the asylum cattle, 18 of Owens', and 2 of the town cows are buried 4 feet deep in trenches at the south end of the farm. Fully 4 feet of earth rests on them, and the surface is covered half a foot deep with gas-lime from the gas-works. A strong high fence, 300 feet distant, incloses the burial place.

Respectfully submitted.

M. R. TRUMBOWER.
Veterinary Inspector.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture.

OHIO.

There have been no animals affected with pleuro-pneumonia in Ohio, according to the most authentic information at our command, since September, 1884. In the herd of Mr. C. R. C. Dye, from which the disease was disseminated throughout the Western States, there have been no cases for more than eighteen months. It is believed that the contagion has been entirely extirpated from this State, and that there will be no new cases of the disease until there is a fresh importation of the contagion. There has been appointed in this State a Board of Cattle Commissioners and a State veterinarian, who have made frequent inspections of the infected herds. They have shown a desire to co-operate with the Bureau of Animal Industry, and in case of any fresh outbreak there is no doubt that we would have the assistance of the State authorities.

ILLINOIS.

The following is a summary of a report made to the Chief of this Bureau by Dr. N. H. Paaren, State veterinarian, under instructions of the Live Stock Commission of Illinois: March 2, 1885, 4 cows and 1 bull were condemned and killed, being all that remained of the Clarke herd at Geneva. Three cows showed unmistakable signs of having been diseased, the lungs adhering to the diaphragm and ribs, and one lung in each cow having encysted portions evidently of very long standing. On the 10th of March the State veterinarian was called to the farm of F. H. Bowron, located directly across the river from the Clarke farm near Geneva, and was shown the lungs of 2 cows that had died of a disease that was afterwards suspected to be contagious pleuro-pneumonia. The lungs were not in a good condition for examination, but

their appearance was such that the farm was quarantined, there being kept upon it 51 head of dairy cows of native and mixed breeds. On May 2 another visit was made to this farm and a cow found in the last stages of pleuro-pneumonia. She was condemned and killed. *Post-mortem* examination revealed extensive adhesion of both lungs, which were torn in removing them from the ribs and diaphragm. All except the anterior lobes of both lungs were diseased, each lung weighing between 25 and 30 pounds. There have been no new cases on this farm nor in Kane County since that time. On the 23d of April the State veterinarian condemned and killed all the animals on Mr. Bailey's farm near Peoria, which had been exposed, with the exception of 1 cow, in all 8 head. This included three diseased animals. The remaining cow subsequently contracted the disease and was killed about two weeks later. These cows included all the animals attacked with pleuro-pneumonia during the year 1885.

On September 15 I visited the herd of Mr. John Boyd, of Elmhurst, Ill., at the request of the State Live-Stock Sanitary Commission. I found there 5 cows, which had been isolated because it was supposed they had been affected with pleuro-pneumonia in a mild form. In 2 of these I could find no evidence of lung disease by auscultation and percussion; in a third there was only crepitation and slight loss of resonance over a small portion of the right lung. In the 2 remaining ones there was greater dullness on percussion and a decrease in the normal sounds of respiration at the same point, but even with these there were no very positive indications of serious lung disease. In examining the herd of cows among which no symptoms of disease had ever been noticed, 1 animal was found with loss of respiratory sounds and dullness over a part of the right lung. With this animal the signs of lung lesions were more positive than with either of those which had been previously isolated. The animal was removed from the herd and placed with those referred to above as suspicious animals. The third animal referred to was unthrifty, and was believed to be suffering from tuberculosis, though no positive signs of this disease were discovered. The owner afterwards concluded to slaughter her, which was done in the presence of the Chief of this Bureau November 19. The *post-mortem* showed that the only lesion of the lungs of old standing that could be made out was the adhesion of the posterior portion of the right lung to the costal pleura. There was some congestion of the anterior part of this lung with a number of collapsed lobules, but no encysted portions to indicate a former serious attack of lung plague.

At the time of my visit in September I was requested by the Sanitary Commission to take charge of the quarantine of this herd, and was assured of the co-operation of the State authorities to make this quarantine effective. It was believed that such a quarantine, maintained under both the national and State laws, would give better satisfaction to the authorities of the other States, and relieve the cattle trade of Illinois from the restrictions that had been placed upon it. As it was nearly a year since any of these animals had shown symptoms of the acute disease, and as the evidence of the lesions at the time of the examination was so slight, it was believed that a quarantine maintained until a period of eighteen months had elapsed since the last symptoms were observed would be sufficient to prevent any danger of future outbreaks. By my recommendation Dr. A. H. Baker, of Chicago, was appointed to visit this herd at short intervals and examine the isolated animals in order to be certain that no symptoms of the disease showed an extension during the time the animals were held in quarantine. These animals have all been

doing well since they have been under our supervision, and there is no reason to suppose that there will be any further cases of lung plague on this farm. Indeed, the period of quarantine has already been considerably longer than is usually required in such cases. Since there are a few instances where pleuro-pneumonia has been disseminated by an animal fifteen months after it has shown symptoms of the acute disease, it was decided to extend the period of quarantine in this case to eighteen months after the last symptoms of this nature had been seen.

VIRGINIA AND WEST VIRGINIA.

July 6, 1885, Messrs. Timberlake and Maslin, of Middletown, Va., sent a communication to the Department of Agriculture, stating that 2 of their cows in a herd of 6 were taken July 1 with an unknown disease, which was supposed to be pleuro-pneumonia, and they asked that an investigation be made to determine the nature of the affection. Dr. H. W. Rowland was ordered to make an investigation at this place. On the 18th of July he reported that the animals were affected with pleuro-pneumonia, but that he had not been able to make a *post-mortem* examination in order to verify his diagnosis. This herd was afterwards examined by Dr. Rose, and the *post-mortem* examination showed the disease to be contagious pleuro-pneumonia. He reported that Charles Hardesty, a cattle dealer of Summit Point, W. Va., had brought cattle there from Chicago and from Baltimore, and that a number of animals in the vicinity of Summit Point showed symptoms of lung disease, and had a cough which resembled that heard in cases of pleuro-pneumonia. The attack, however, was in all cases very mild, and the animals seem to have entirely recovered from it. Several inspections have since been made of the cattle at Summit Point, W. Va., and of those at Middletown, Va., which were infected by cattle from Summit Point, but no further cases of the disease have occurred, and it is believed that the contagion in that vicinity has entirely died out from natural causes.

Inspections made at Arlington, Va., in January, 1885, discovered one herd affected with pleuro-pneumonia at that place, and a partial inspection of the herds in the vicinity of Alexandria and Mount Vernon revealed six herds which either contained affected animals or in which the disease had recently existed. There are no laws in this State which enable the local authorities to co-operate with this Bureau to prevent the movement of diseased or exposed animals within the State.

DELAWARE.

In the First Annual Report of the Bureau of Animal Industry (page 448) reference was made to an outbreak of contagious pleuro-pneumonia in Delaware. The State law bearing upon this subject was printed in full, together with the correspondence between the Commissioner of Agriculture and the governor of Delaware, arranging the preliminaries of a plan of co-operation. Dr. Ward B. Rowland was appointed State veterinarian by the governor, and Drs. William B. Miller and C. K. Dyer, inspectors of this Bureau, were detailed to assist in making an inspection of the suspected herds. Our inspectors remained in the State about ten days, and found three herds in which pleuro-pneumonia existed, and in these herds there were 42 affected animals. All these herds were placed in quarantine by the State veterinarian and held until May 18, when the appropriation was exhausted and the animals

released. At that time thirteen infected herds were in quarantine. The following letter, which explains itself, was addressed by me to Dr. Rowland in June:

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., June 25, 1885.

SIR: I have been informed by the Pennsylvania authorities that they are apprehensive of the shipment of cattle of infected herds from Delaware to Pennsylvania. In reference to this subject I would like to inquire if the law of Delaware is such that you could be appointed an inspector of the Bureau of Animal Industry and at the same time hold your position as veterinarian of Delaware. In that case, would the governor be willing to have you act in both capacities, and would he sustain you in holding suspected herds in quarantine under the State law until the meeting of the next Congress, when it is hoped measures will be adopted for the suppression of the disease? Would you accept an appointment from this Department at a salary of $5 a day, and actual, necessary expenses for the days on which you are employed at Department work, and devote a sufficient part of the time to this work to keep us well informed as to the extent of the disease in your State? If this suggestion meets with your approval, I would be glad to have you consult with the governor and to hear your conclusion at an early day.

Very respectfully,

D. E. SALMON,
Chief of Bureau.

DR. WARD B. ROWLAND,
Wilmington, Del.

On July 10 Dr. Rowland addressed me a letter inclosing a communication from Governor Stockley authorizing him to accept an appointment from this Bureau, and to hold the infected herds in quarantine, providing such action was without expense to the State of Delaware. July 29 the appointment was sent to Dr. Rowland to act as an inspector of this Bureau in accordance with the plan outlined above. He was instructed to put the infected herds in strict quarantine according to the State laws and prevent any movement of infected cattle within the State, and especially from Delaware into any other State; also to make an inspection of the county or counties infected with the disease, and to report weekly to this Bureau the results of his inspection.

Since his appointment Dr. Rowland has reported the existence of seven infected herds, containing 184 head of cattle, 33 of which were visibly affected with pleuro-pneumonia.

In October, 1885, Dr. Rose, an inspector of this Bureau, was directed to make an investigation in regard to the condition of the herds then held in quarantine. He reported that the animals exposed to the contagion had been inoculated, and that the herds were then held in quarantine. The herd belonging to the Lobdell Car-Wheel Company contained 18 heifers and young steers which were inoculated in March. There were 3 cows not inoculated belonging to a neighbor which gained entrance into the field with the infected cattle and were quarantined with them. A number of these animals had a cough, which was most marked with 2 of the cows which had not been inoculated. The herd of John and Frank McCauley contained 19 head of cows and young stock, among which were 2 convalescent or chronic cases. This herd had also been inoculated, and it was asserted that no new cases had developed since the operation had been performed. The herd of George White contained 18 cows, among which were 2 animals in the chronic stage of the disease. These animals had not been inoculated, and were in substantially the same condition as the animals in the inoculated herds. The herd of the Edgemoor Iron Company contained 46 head which had been inoculated, 9 which had not been inoculated, and 8 convalescent cases. A great many of these animals were coughing. All

of the acute cases on this and the other farms had been purchased and destroyed by order of the governor. The herd of John Banks contained 14 animals, with which was 1 animal in the chronic stage of the disease. This herd has been inoculated, but the inoculation did not "take" in any of them. They remained free from local lesions and constitutional symptoms. No new cases of the disease have developed since the inoculation was practiced. John Boyd's herd consisted of 7 inoculated animals, of which 1 had been affected with pleuro-pneumonia. Elis Hicks' herd consisted of 18 inoculated animals and 5 which had been through the disease. Nicholas Garrett had 16 inoculated animals and 1 which had been sick. In regard to these herds no further particulars are given. Some herds in other parts of the State which have been infected were disposed of by the slaughter of the sick animals, on the order of the governor, and the sale of those in health to be slaughtered for food. Dr. Rowland believes that he has traced most of the outbreaks in Delaware to infected animals brought from Baltimore. It is to be noted, however, that cows are frequently taken to this part of Delaware from Chester and Lancaster Counties, Pennsylvania, where there have recently been infected herds. Dr. Rose saw 40 cows which had been driven from these counties to Wilmington the day of his visit, which were sold there. It should also be observed that the supervision in none of these cases has been so rigorous as to prevent new stock from being added to the herds, or the concealment of cases of the disease which may have occurred during the period of quarantine. In some instances animals were bought and placed in the quarantined herds without the knowledge of the State veterinarian, and it is very evident that cows which contracted the disease might easily have been destroyed and replaced with fresh animals in order to convince the inspector that no cases of disease had occurred, and in that way prevent the extension of the period of isolation. This fact is also to be taken into consideration in estimating the beneficial effects of the inoculation of these herds.

NEW JERSEY.

The inspections in this State have been kept up during the greater part of the year, and a large number of herds have been inspected. By co-operation with the State Board of Health, which has charge of the diseases of animals in this State, infected herds have been quarantined and much has been done to reduce the prevalence of the disease.

PENNSYLVANIA.

In order to learn to what extent pleuro-pneumonia is disseminated in this State, two inspectors were sent there at different times during the year with instructions to investigate and learn if the disease existed in any of the herds that were not in charge of the State authorities. Neither of these inspectors was able to find any cases except those which had already come to the knowledge of the State veterinarian. Dr. Rose, who made the last inspection in October, 1885, reported that the contagion still existed on the farms near Westchester, Chester County, which I visited in 1884. Some of these herds had been inoculated by the State veterinarian, but the disease continued to develop long after the operation was performed. The herd of Levi Lewis, which had been inoculated, was one of those in which the infection has continued to exist. Three cows purchased since June have all contracted pleuro-pneumonia; 2 were sick at the time of the visit, and 1 had made a partial

recovery. Mr. Lewis stated that every new animal taken into the herd developed more or less symptoms of the disease after it had been with the other animals a certain length of time. It has been reported that animals have been sold from herds in this condition. Such herds have not been and cannot be held safely in quarantine during the period that is required to destroy the contagion by the methods there adopted.

MARYLAND.

A thorough inspection of this State has not been made. One of the inspectors of this Bureau is now engaged in this work in the vicinity of Baltimore, but has only lately commenced, and, consequently, there are few returns up to this time. The following table gives a condensed statement of the number of herds and animals examined during the year, and the number found affected with pleuro-pneumonia. The details of this inspection will be found in another section of this report:

Summary of inspections.

Location.	Number of herds and stables examined.	Number of cattle examined.	Number of animals affected with contagious pleuro-pneumonia.	Number of herds infected.
New York City	870	6,947	95	45
Slaughter-houses, &c	986	4,593	395	.....
Piers, steamers, &c	203	2,806	.....	.....
New Jersey	3,896	43,367	210	58
Reinspections	52	755	73	16
Abattoirs, stock-yards, &c	45	.....	4	.....
Delaware	24	646	75	11
Maryland	19	378	38	11
District of Columbia	342	2,504	100	55
Virginia and West Virginia	43	1,039	17	11
Kentucky	134	1,615	104	29
Total	6,614	64,650	1,111	236

INOCULATION BY STATE AUTHORITIES AND OTHERS.

Inoculation has been practiced to a considerable extent in Brooklyn, N. Y., by local practitioners, cattle dealers, and the owners of infected herds. In New York, New Jersey, Pennsylvania, Delaware, and Maryland it has been largely practiced by the local authorities. While this proceeding may have saved the owners of infected herds the loss of a few animals, and has possibly relieved these States from a certain amount of embarrassment as to the disposition of infected herds, it must, nevertheless, be looked upon with alarm from a national point of view. The inoculated herds are not subjected to that close supervision which is necessary to prevent the sale of animals, nor is the period of quarantine maintained for a sufficient time for all danger to be passed. Animals which are mildly affected are inoculated with the healthy ones, and within three months after the last case of the disease is known to the authorities all quarantine restrictions are removed. It is absolutely certain, from the experience in Europe and this country with inoculation, that the infection is maintained in inoculated herds for a much longer time than three months, and that fresh animals introduced into these herds are very liable to contract the disease. This point will be elaborated in another section of the report, and is referred to here to

draw attention to this source of danger which has been rapidly increasing in importance during the last year.

SUMMARY IN REGARD TO PLEURO-PNEUMONIA.

The danger from pleuro-pneumonia west of the Allegheny Mountains has been greatly reduced since the first annual report of this Bureau was presented. Ohio, Illinois, and Missouri are now free from this plague. Much progress has been made in freeing Kentucky from it, and it is believed that, providing the present quarantine measures can be kept up for a few months longer, the disease will soon disappear in this State. The shipment of calves and thoroughbred animals from sections of the east liable to be infected has its periods of increase and decline as with other branches of traffic; as a whole, however, it has been increasing and will continue to increase from year to year. It is now an important part of the trade of the country and has reached such proportions that it can be neither prohibited nor materially modified by the local quarantine regulations of the several States; and for the same reason it is impossible to keep such a supervision of it as will protect the West from the introduction of disease. So long as pleuro-pneumonia is allowed to exist in the East it may be accepted as a self-evident proposition that the West will be subject to invasions of it, and that no local regulations can protect them.

As to the prevalence of this plague in the East, the details of inspections show that it exists where it has been reported to exist for years. The infected territory has not been noticeably increased or diminished. The inspections were undertaken to furnish data which would serve to indicate the measures and the expenditure that would be required for the extirpation of the contagion. They cannot be taken as showing accurately the number of cattle which have been affected with pleuro-pneumonia during the year; but simply as the number of cases of disease which the inspectors saw by going once or twice over the territory. There were too many infected herds for us to undertake to keep them all under supervision. In many infected stables inoculation was practiced, and it was admitted by the owners that new animals brought into these herds would contract the malady unless they were protected by inoculation; often they would contract it in spite of this operation. Conversely, it may be accepted as beyond controversy that animals taken from these inoculated herds and allowed to mingle with healthy ones would disseminate the contagion. These herds which are infected, but which do not contain sick animals, therefore, do not appear on our inspection list; and it is doubtful if their shipment from State to State could be prevented under the present law, which provides a penalty for shipping *affected* animals. Two breeding herds of Holstein-Friesian cattle have been affected during the year, and other breeding herds have been exposed.

The number of infected herds in the Eastern States is so great that no attempt has been made by this Bureau to notify their owners and neighboring transportation companies of their existence. Indeed, it would have been impossible to verify the diagnosis and issue the notifications with the present limited force of the Bureau. If issued, such notifications would be of no value unless the herds were kept under supervision; this, again, was impossible because of our limited force. As a matter of fact it has been difficult to prevent shipment of affected animals in the isolated outbreaks of the West where the community favored stamping out the disease, and were anxious to assist and fur-

nish information. In the cities of the East the situation is very different. The community is frequently hostile to interference. No reliable information can be obtained from neighbors. There are numerous transportation companies by which shipments may be made, and the owners of cattle will not always allow inspection. It is useless to attempt to accomplish anything under such circumstances without power to make inspections, whether the owner is willing or not (and he generally is not willing if his cattle are affected), and authority to enforce such measures as are necessary to stamp out the disease as soon as found. To undertake a quarantine of infected herds without adopting measures to extirpate the contagion, would result in the accumulation of so many infected herds in quarantine that no effectual supervision could be kept up without a large number of inspectors and an expense much greater than would be necessary to stamp out the disease at once by the slaughter of every infected animal.

Co-operation with State authorities to accomplish the prompt extirpation of the disease has not been practicable, because very few States have laws authorizing co-operation in any form for this purpose, and none have sufficient appropriations to justify their officers in attempting the slaughter of all infected herds. Our efforts in the East have, therefore, been limited to an inspection that would give an approximate idea of the infected territory, the number of infected herds, and the number of affected animals existing at any one time.

In making the appropriation for the Bureau of Animal Industry for the fiscal year ending June 30, 1886, a clause was added, reading as follows: "And the Commissioner of Agriculture is hereby authorized to use any part of this sum he may deem necessary or expedient, and in such manner as he may think best, to prevent the spread of pleuro-pneumonia, not to conflict with existing law." There was a radical difference of opinion as to whether this clause conferred any additional authority for the expenditure of money over that contained in the law of May 29, 1884. Accordingly the following letter of inquiry was addressed to the First Comptroller of the Treasury Department:

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., June 18, 1885.

SIR: I would respectfully ask you for a decision as to the power conferred upon the Commissioner of Agriculture by the following section of an act making appropriations for the Agricultural Department, for the fiscal year ending June 30, 1886:

"For carrying out the provisions of the act of May twenty-ninth, eighteen hundred and eighty-four, establishing the Bureau of Animal Industry, one hundred thousand dollars; and the Commissioner of Agriculture is hereby authorized to use any part of this sum he may deem necessary or expedient, and in such manner as he may think best, to prevent the spread of pleuro-pneumonia, not to conflict with existing law."

Does this language give any authority to the Commissioner of Agriculture in the use of this money beyond what is conferred upon him in the act of May, 1884? It seems to have been the intention of Congress to allow this Department to compensate the owners of such cattle as it would be necessary to destroy in order to stamp out the dangerous outbreaks of contagious pleuro-pneumonia in the Western States; otherwise there would appear no reason for inserting the last half of the sentence.

In this connection I desire to call your attention to the following extract from a letter, received from the Hon. Thomas Sturgis, secretary of the Wyoming Stock Growers' Association, dated Cheyenne, Wyo., April 24, 1885, in which he says:

"I am directed by the executive committee of this association to convey to you an expression of their deep interest in the question of contagious cattle diseases, and their sympathy with the efforts you are making for the extinction of pleuro-pneumonia. The writer and Judge Carey were members of the committee which framed and assisted in securing the passage of the animal industry bill and were also of the committee, the past winter, which secured the passage of the clause in the legislative appropriation bill which secured the further appropriation of $100,000, and the extension of the powers of the Commissioner, permitting him to use it at his discretion;

noticing that some question has arisen as to the power of the Commissioner to use any part of this appropriation to pay for cattle destroyed on account of disease, or to prevent the spread of disease, it was thought by this committee that you might be glad to know the intention of the two committees of agriculture in the House and Senate, at the time of the passage of this last clause, and that it was understood by Congress to give the Commissioner the power to pay for the above classes of cattle if he saw fit, and the reason that it was put in this form was because that, at that period of the season, the laws of both houses prohibit the putting of any addition to any appropriation bill which is not absolutely germane to the appropriation. The two houses wished to give this power to the Commissioner, and it was with that intention that the clause referred to was passed.

"For corroboration of this, I take pleasure in referring you to General Dibrell, of Tennessee, and Hon. James Wilson, of Iowa, who were both members of the House committee."

An early reply to the above is respectfully requested.

I have the honor to be, your obedient servant,

F. C. NESBIT,
Acting Commissioner.

Hon. M. J. DURHAM,
First Comptroller, Treasury Department.

Below will be found the Comptroller's reply:

TREASURY DEPARTMENT, FIRST COMPTROLLER'S OFFICE,
Washington, D. C., June 19, 1885.

SIR: In reply to your letter of yesterday, asking my construction of the two statutes referred to therein, that of May, 1884, and that of March 3, 1885, and especially those parts of the act in regard to your powers to use the money appropriated to prevent the spread of pleuro-pneumonia, I would state that I have examined both acts, and I believe that your power is as complete under the one as the other, and that the act of March 3, 1885, gives you no authority or additional control over the fund appropriated other than that conferred by the act of May, 1884.

Very respectfully,

M. J. DURHAM,
Comptroller.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture.

This correspondence is sufficient to show, without further explanation, why no part of the appropriation has been used for the purchase and slaughter of infected herds.

MEASURES PROPOSED FOR THE EXTIRPATION OF PLEURO-PNEUMONIA.

For the extirpation of pleuro-pneumonia a number of different plans have been advocated from time to time, and each of these still has its supporters. Some believe in the efficacy of medical treatment, others favor an extensive introduction and practice of inoculation, while still others feel certain that nothing short of the slaughter of all infected animals can prove a successful or reliable means of combating this insidious plague. None of these classes, even in our own country, is so small that it can be overlooked. The majority still seem to have implicit faith in drugs, even for the treatment of contagious diseases. Many have a combination of medicines of their own compounding, which, they believe, or pretend to believe, will cure the most obstinate disease of the lungs, and even the contagious lung plague. Others have equal faith in some new preparation of carbolic or salicylic acid, or of one of the many new forms of comparatively well known drugs which are continually coming upon the market. Hundreds of letters have been received at the Department urging the investigation and testing of such supposed remedies or specifics. On the other hand, inoculation has its adherents, and it is being practiced on a larger scale than is desirable

in Brooklyn, in New Jersey, in Pennsylvania, and in Maryland. A goodly number of intelligent people, however, are convinced that neither medical treatment nor inoculation can be safely practiced in our country for the control of pleuro-pneumonia, but that the only way to protect our herds against its deadly advance is to stamp out the contagion at once and thoroughly wherever it is found. These differences of opinion make it desirable that the facts bearing upon the different methods of treatment proposed should be considered in detail, and that especially in regard to inoculation we should have the truth brought out by an array of facts which will admit of no further contest. This subject has never before been placed before American readers with sufficient detail to convince them that inoculation is not a desirable operation, while its advocacy by many members of the veterinary profession have tended to obscure the question and leave the reader in doubt as to whether anything is settled in regard to it.

MEDICAL TREATMENT.

No specifics have been discovered for the cure of contagious pleuro-pneumonia. The whole list of drugs has been tried separately and in various combinations with this as with most other diseases of this nature. Many have been convinced that they had made valuable discoveries in the treatment, and in this they have been confirmed by the insidious character of the plague and by the many comparatively mild cases in some outbreaks which make partial or complete recovery even without medication. A more extensive trial, however, has always been sufficient to show that no remedy has a very marked effect upon the progress of this disease.

The simple and well known measures used for the control of inflammations and fevers have in the end given better results than those drugs which it was supposed might have a specific action from their properties as disinfectants and germicides.

By the most simple treatment, or by good care without medicines, a considerable proportion of the affected animals may be carried through the acute stage of the disease and saved. But while the saving of such animals may be desirable to the individual who owns them, it can under no circumstances be desirable to the community. It is only those few individual cattle which have been very mildly affected that can in any case make a good recovery. None of those which are affected at all severely are able to recover entirely from its effects. The diseased portion of the lung remains diseased; it loses all life, becomes encysted, breaks down into pus, and retains the virulent contagion for an indefinite period; and the animals which possess such a lung are frequently the most dangerous of any. They may appear in perfect health to the casual observer, or to the best judge of cattle, and yet they scatter the contagion and infect all susceptible cattle with which they come into contact.

While animals affected with lung plague are treated and allowed to recover, while these partially recovered subjects go into the general markets of our towns and cities and enter into the commerce of our country, we shall, therefore, continue to have the disease among our cattle. For this reason medical treatment is not to be encouraged, and the policy of this Government, which has an unexampled internal commerce to protect and the food supply of the nation to save from this danger, should be to give no animals once affected with so dangerous a contagion an opportunity to transmit it to others of their species,

INOCULATION.

The word inoculation is applied to the operation of inserting the unmodified infectious material or virus of a contagious disease into or beneath the skin of another animal. With pleuro-pneumonia this infectious material may be the nasal mucus, or the plastic lymph exuded into the connective tissue of the lung, or the pleural effusion, or the lymph which collects in the connective tissue at the point where a preceding inoculation has been made, or it may be a piece of affected lung tissue. It may be inserted into the skin or subcutaneous tissues of the ear, neck, dewlap, arm, tail, or indeed, of any part of the body. The operation may be a simple lancet puncture, a hypodermic injection, a seton saturated with the virus, or a piece of lung laid into a wound and bandaged there. Each of these different methods has its advocates, and any one is as much inoculation as any other, the essential part of the operation being the insertion of the virus into or under the skin of the animal operated upon.

HISTORY OF INOCULATION.

It is said that inoculation, as a preventive of pleuro-pneumonia, was attempted as early as 1820 by Kersman and Hausmann at the Veterinary School of Hanover. Later it was tried by Veith, Ernst, Desaive, Dieterichs, and Vix, but by none of them upon a sufficient scale to result in any definite conclusions. Dr. Willems, of Hasselt, Belgium, now receives the credit for originating and introducing the operation. He commenced experimenting in 1850, and gave his results in a communication addressed to the Belgium minister of the interior, which was published in the *Recueil de Médecine Vétérinaire* in 1852. His first experiments were made upon rabbits, turkeys, fowls, a dog, goats, a sheep, and pigs; it even happened that the operator wounded his own finger with a scalpel charged with the virulent material. In all of these cases the results were constantly negative. It was very different with his experiments made upon the bovine species. These produced a decided effect, and he states that 108 animals were preserved from pleuro-pneumonia by them, while of 50 beasts in the same stables that were not inoculated, 17 contracted the disease. He added that the inoculated animal braves with impunity the epizootic influences, and fattens better and more rapidly than those under the same conditions which have not been inoculated.* Willems' conclusions were as follows:

(1) Pleuro-pneumonia is not contagious by inoculation of the blood, or other matters taken from diseased animals, and placed on healthy ones.

(2) That the blood and the serous and frothy liquid squeezed from the lungs of a diseased animal in the first stages of pleuro-pneumonia, are the most suitable matter for inoculation.

(3) The inoculation of the virus takes from ten days to a month before it manifests itself by symptoms.

(4) The matter employed for the inoculation has, in general, no effect upon an animal previously inoculated, or having had the disease.

(5) The inoculated animal braves the epizootic influences with impunity, and fattens better and more rapidly than those in the same atmosphere with it that have not been inoculated.

(6) That inoculation should be performed with prudence and circumspection, upon lean animals in preference; and towards the tenth day after the operation a saline purge may be given, and repeated if necessary.

* J. Cruzel, *Traité pratique des maladies de l'espèce bovine. Deuxième edition par F. Peuch, Paris*, 1883, *p.* 548.

(7) By inoculating pleuro-pneumonia a new disease is produced; the affection of the lungs, with all its peculiar characters, is localized in some parts of the exterior, but whether it occasions apparent morbid manifestations or not, the inoculated animal is preserved from pleuro-pneumonia.

(8) The virus is of a specific nature; it does not always act as a virus. The bovine race alone is affected by its inoculation, since other animals of different races, inoculated in the same manner and with the same liquid, experience no ill-effects.*

At the time Willems' communication was published the French scientific commission appointed to investigate pleuro-pneumonia was in existence, and immediately took up this aspect of the question. Fifty-four animals were inoculated by the commission and 6 of these died from the effects of the operation. Of the 48 head which recovered from the inoculation, 2 died from causes not connected with the operation, and 34 were exposed during a period of from five to six months to the direct influence of contagion by cohabitation. With these, 24 other animals that had not been inoculated were also exposed by way of comparison. None of the inoculated animals contracted pleuro-pneumonia, while 15 out of the 24 that were not inoculated were more or less affected.

The commission concluded that the operation ought to be encouraged, and that there were hopes of its becoming profitable to agriculture after it had been perfected in its application by a more complete study. To reach this opinion the commission considered not only its own experiments, but those which had been undertaken at the same time in Holland, Belgium, and in the departments of the North and of Pas-de-Calais in France. These experiments, it was stated, included observations upon 6,764 cattle.

Inoculation has already been practiced also upon a large scale in Holland, Italy, and the north of France.†

Judged by the experiments of the French commission alone, the operation had nothing to commend it. Six animals out of 54, or more than 11 per cent., died from the operation, while of 46 animals exposed to the contagion of pleuro-pneumonia but 4 died, or less than 9 per cent. In other words, the deaths from inoculation were 2 per cent. greater than from the disease which was to be prevented by the operation. The animals which died from inoculation were doubtless the most susceptible ones of the lot to the contagion of pleuro-pneumonia, and, consequently, the remaining ones might be expected to be more or less refractory towards the disease, even if their powers of resistance had not been increased by the inoculation. As a matter of fact, it very frequently happens that in a stable containing this number of animals, into which pleuro-pneumonia is introduced, not more than 10 per cent. are affected, while the remainder, though exposed during the whole period of the outbreak, show no symptoms. These animals, then, must be insusceptible without any inoculation, and in considering the effects of this operation it is necessary to make allowances for such facts. Knowing that this was the case, it is evident that the opinion of the French commission must have been based rather upon what they had heard of the results in Holland, Belgium, and Italy than upon their own experiments. It will be interesting to see what really were the results of the experiments in the other countries of Europe.

The Belgian commission reported the following summary of conclusions in 1853:

That inoculation with liquid extracted from a hepatized lung, the result of exudative pleuro-pneumonia, is not a certain preservative against the malady. That the phenomena succeeding inoculation may be produced several times in the same animal,

* George Armitage, Trans. Higl. and Ag. Soc. of Scotland, 1876, p. 167.

† Cruzel, *Traité pratique des maladies de l'espèce bovine*, 2nd. ed., p. 549.

which may or may not have been attacked with exudative pleuro-pneumonia. That the two affections may exist together in the same individual, and that considerable derangements are manifested in the inoculated part, whilst the morbid action of the lungs progresses towards a fatal termination. As to ascertaining whether inoculation really possesses a preservative power, and, if so, in what proportion and for what length of time it imparts immunity to the animals subjected to it, these are questions which can only be solved by further experiments.*

In 1854 the question of inoculation was brought before the Belgian Chamber of Representatives, and they refused either to compensate Dr. Willems or to recognize the utility of his discovery. The minister of the interior read the following conclusion from the forthcoming report of the special commission appointed to investigate the question:

That if inoculation did appear in certain cases to have produced immunity, in others it had been altogether incapable of preventing the developments of exudative pleuro-pneumonia. That these contrasts, and they were not a few, had been observed as much in foreign countries as in Belgium, and that there are not sufficient facts at present to convince the commission that inoculation gives security to cattle against the disease, either in absolute or even temporary manner.†

The report of the Dutch commission, appointed in 1852, was more favorable. It said:

Although the present trials prove in a remarkable degree that inoculation possesses the power, at least temporarily, to prevent infection, it remains uncertain how far the disposition for the disease is completely or only for a time destroyed.‡

In August, 1852, Dr. Ulrich was commissioned by the Prussian Government to go to Cologne and into Belgium and make observations, on the spot, of the pleuro-pneumonia inoculations. He reported among others the following conclusions:

(1) It is an established fact that in many stables wherein pleuro-pneumonia had raged for several years, as well as in others which had only been infected by it of late, the disease disappeared shortly after inoculation. That, on the other hand, cases have occurred in which the disease has continued to rage after and in spite of inoculation.

(2) In many cases of beasts dying afterwards of the disease, inoculation has not proved successful. At the same time there exist examples to the contrary; animals with which inoculation has quite succeeded, and yet for all that they have become afterwards the subject of the disease.

* * * * * * * *

(5) No instance has come to our knowledge wherein inoculated animals placed in purified stables have become infected. Nevertheless, a member of the agricultural association of Dusseldorf has assured the members at a recent sitting that inoculations made at Rheinberg had been attended with the results of propagating pleuro-pneumonia, which before was in that situation unknown.—(Veterinarian, 1853, p. 515.)

These varying results did not permit Dr. Ulrich to pronounce definitely on the value of inoculation.

In 1852 Professor Simonds made an investigation of the questions pertaining to inoculation in behalf of the Royal Agricultural Society of Great Britain. He visited Belgium to see the methods of Willems, and instituted experiments in England. He made two reports, one dated September, 1852, and the second dated June, 1853. His conclusions only will be given in this place, and are as follows:

(1) That inoculations made by superficial punctures and simple erosions of the skin invariably fail to produce any local inflammatory action, being the reverse of the case with regard to the vaccine disease, small-pox, and other specific affections, of which it is an indication of success.

(2) That the employment of fresh serous fluid, and a cleanly made but small incision during the continuance of a low temperature, will almost always fail to produce even the slightest amount of inflammation.

---

*Professor Simonds, Veterinarian, 1853, p. 453.

†Veterinarian, 1855, p. 218.

‡Professor Brown, Jr. Bath and West of Eng. Soc., Third Series, Vol. III, p. 170.

(3) That deep punctures are followed by the ordinary phenomena only of such wounds, when containing some slightly irritating agent.

(4) That with a high temperature, roughly made incisions, and serous fluid a few days old, local ulceration and gangrene, producing occasionally the death of the patient, will follow inoculation.

(5) That the sero-purulent matter taken from an inoculated sore causes more speedy action than the serum obtained from a diseased lung, and that "removes" cannot be effected on scientific principles.

(6) That oxen are not only susceptible to the action of a second but of repeated inoculations with the serous exudation of a diseased lung.

(7) That an animal inoculated with the serous exudation is in no way protected even from the repeated action of the sero-purulent fluid which is produced in the wound as a result of the operation.

(8) That animals not naturally the subjects of pleuro-pneumonia, such as donkeys, dogs, &c., are susceptible to the local action both of the serous exudation from the lung and the sero-purulent matter obtained from the inoculated wounds.

(9) That the serous fluid exuded from the lung is not a specific "virus" or "lymph," as it is sometimes designated.

(10) That inoculations made with medicinal irritating agents will be followed by similar phenomena to those observed in inoculations with the exuded serum.

(11) That inoculation often acts as a simple issue, and that the security which at times the operation apparently affords depends in part upon this, but principally upon the unknown causes which regulate the outbreak, spread, and cessation of epidemic diseases.

(12) That inoculation of cattle as advocated and practiced by Dr. Willems and others is not founded on any known basis of science or ascertained law with regard to the propagation of those diseases commonly called specific.

(13) That pleuro-pneumonia occurs at various periods of time, after a so-called successful inoculation.

(14) And lastly, that the severity of pleuro-pneumonia is in no way mitigated by previous inoculation, the disease proving equally rapid in its progress and fatal in its consequences in an inoculated as in an uninoculated animal.*

Dr. Reviglio, an eminent veterinarian of Turin, after making an investigation of this new method of preventing pleuro-pneumonia, reaches the following conclusions, having considered the reports that had been published in other countries as well as his own experiments:

(1) That this inoculation, discovered and recommended by Dr. Willems, is not based on scientific principles.

(2) That all the facts obtained by the several experiments have concurred in showing that the virus, when introduced into living tissues, produces inflammation in no way different from that caused by setons, &c., except that it has a greater tendency to a gangrenous result.

(3) That if we admit its revulsive effects, it still possesses no advantages over therapeutic agents in common use in veterinary practice.

(4) That as inoculation is frequently followed by serious and sometimes fatal consequences, it is just and reasonable to give a preference to the usual derivatives.

(5) That should it happen to be, as Dr. Willems pretends, a prophylactic, for which there seems, however, to be no valid ground, proofs are wanting for the inoculative qualities existing in the serum exuded from the lungs, and, therefore, its employment can be of no benefit.†

The Belgian commission continued its investigations and made its fifth report in 1858. It analyzed the experiments of previous years in Belgium and in other countries, added its own experiments, and reached the following conclusions:

(1) The inoculation, well performed, is an operation unattended with bad consequences. The accidents resulting from it are in very small proportion, when the operation is performed in proper season.

(2) In Belgium pleuro-pneumonia has reached its decline. The fact annihilates the value of the cases in which its cessation was attributed to the inoculation.

(3) In Friesland the inoculation does not appear sufficient to stop the progress of the epizootic.

(4) In numerous cases pleuro-pneumonia manifested itself more than fifteen days after inoculation, and sometimes even later.

---

* Veterinarian, 1853, p. 477.

† George Armitage, Trans. Higl. and Ag. Soc., 1876. p. 178.

(5) The local phemonena of the inoculation and of those of pleuro-pneumonia may develop simultaneously with equal intensity.
(6) Inoculation does not constitute a sure preservative against pleuro-pneumonia of cattle.
(7) Inoculation has perhaps the property to diminish the frequency of cases of pleuro-pneumonia, and to retard the epoch of its invasion.
(8) Revulsives appear to have the same property.*

After the introduction of pleuro-pneumonia into Australia, in 1858, and its dissemination there, inoculation was practiced upon a large scale, but the results were not very apparent. The disease continued its ravages in spite of this operation, and when the legislative assembly of New South Wales caused a Blue Book to be compiled in 1867, containing the statistical information received in answer to 1,400 circulars, they seemed to be as far from a demonstration of the value of this process as they were at the beginning. The replies numbered 554, of which 282 were from owners who inoculated their herds, and 272 were from those who did not. Of the 282 practicing inoculation, 234 favored the operation, 19 were opposed to it, 11 were doubtful, and 7 offered no opinion. Of the 272 replies from owners who did not inoculate, 54 were represented to be favorable to the operation, 50 were unfavorable in their opinions, 13 were doubtful, and 155 offered no opinion. There was consequently nothing like a unanimity of opinion. In an able review of this Blue Book in the Mark Lane Express, the following language occurs:

After minute and careful analysis of the report, I am bound to confess that the only opinion I can form, strictly from the evidence, is that so far as the real question at issue is concerned there is no reliable evidence at all. It has not contributed one iota to the sum of the knowledge already possessed on the subject. There is no real value to be attached to this echo from the wilderness.—(Veterinarian, 1876, p, 796.)

Inoculation has been practiced largely in Holland, Belgium, Saxony, France, and Great Britain, and in all of these countries its value is still contested, and where it has been most practiced and for the longest time, there pleuro-pneumonia seems to be most firmly fixed, and the losses are the heaviest. In America it has been used more extensively in Brooklyn and Baltimore than anywhere else, and these are precisely the cities which are to-day the greatest hot-beds of the contagion. In both of these cities the operation has been generally practiced by empirics, and from neither have we been able to secure any statistics of value in the consideration of a question of this nature. For this purpose we are still obliged to turn to the experiments and observations of the official veterinarians of Europe, who have been able to exercise a more rigid supervision over infected animals than has so far been possible in this country. But even in those countries of Europe where the laws are most strict the returns frequently lack in the element of certainty which is so essential in those facts accepted as a basis for scientific conclusions. Before attempting to analyze these statistics, however, some account will be given of the methods of performing the operation and of the results which follow it.

Point selected for introduction of virus.—Experience has demonstrated the importance of selecting a part of the body where the connective tissue is dense, and for that reason resists the inflammatory swelling and the serous exudation which follow the operation when it is successful. When the inoculation is followed by an extreme and dangerous reaction it has also been found very convenient to have the swelling in an organ which can be amputated without danger or serious damage to the animal. For these reasons the inferior extremity of the tail is the

* George Armitage, *loc. cit.*, p. 179.

point generally selected for the insertion of the virus. If practiced in other regions, and particularly at the base of the ear, the lower part of the neck, the dewlap or the shoulder, it is generally followed by fatal accidents, and this fact has led M. Bouley to speak of them as *défendue sous peine de mort.* The very fact of extreme results following inoculations in these regions led this eminent veterinarian to select them as the points for a second inoculation, designed to demonstrate that immunity was acquired by inoculation in the tail.

Virus used for inoculation.—The liquid used for inoculation is the lymph which has exuded into the interlobular connective tissue of an affected lung. It should be taken from an animal in the early stages of the disease, and only that part of the lung used which is freshly hepatized. The liquid may be removed from the distended connective tissue with a pipette or hypodermic syringe, or the lung is cut in sections and the fluid allowed to drain from it into a suitable vessel, or the instrument used for inoculating may be charged directly from the hepatized lung tissue. If the lymph is to be preserved for any time before using, it should be gathered in glass tubes or bottles which have been previously heated to destroy all foreign germs that they might contain. About 2 per cent. of common salt (Professor Walley) or one-fourth its volume of glycerine (Dr. E. H. Bartley) have been added to it by some with a view of preserving the virulence for a longer time without interfering with its activity.

Method of inoculating.—The hair should be removed from the part selected, in order to facilitate the operation and to allow subsequent examination. The virus is inserted at a distance of from 1½ to 3 inches from the lower extremity of the tail; and if more than one puncture is made, there should be a distance of 2 or more inches between these. The simplest operation is to make an incision through the skin with a scalpel or knife, and then moisten this incision with a drop of virus. Some use a lancet, making a puncture in a direction from above downwards, then charge the instrument with virus and insert it a second time into the wound. A grooved needle is frequently used, and for a number of years the hypodermic syringe has been recommended by many operators. Others insert one or two strands of cotton or woolen yarn that has been previously saturated with virus, by drawing it under the skin with a curved needle; the yarn may be drawn once backwards and forwards in ten or twelve hours, and should be withdrawn entirely in twenty-four hours.

The effects of inoculation.—When the operation is successful, there forms at the point where the virus was inserted, a small, hard, hot, inflammatory tumor. This swelling makes its appearance after a period following the inoculation which may vary from two to forty days, but as a rule is seen in from twelve to fifteen days. The swelling is painful to the touch, the skin is red and tense, and if the virus has been inserted by an incision, this may gape and discharge a serous or sero-purulent liquid. In many cases a straw-colored serum oozes from the skin, and collects in the form of more or less distinct, but small vesicles; in some cases no vesicles are formed, the serum simply oozing out and flowing evenly over the surface of the skin; if vesicles are formed they burst and discharge their contents in the course of a day or two. In either of these cases, the fluid becomes inspissated from exposure to the atmosphere, and forms, with the epidermis and hair, an adherent scurfy or scabby mass, which in the process of time falls off, leaving the skin more or less roughened, wrinkled, and hardened, and the hair somewhat erect (Walley). Sometimes an ulcer forms at the point of inoculation, and

sometimes there is circumscribed gangrene of more or less extent accompanied by the discharge of a bloody liquid. This is about the extent of the local lesions in those cases where the process follows what may be called a regular course; and these local lesions disappear in from ten to sixty days according to their extent, the average duration being from two to three weeks.

With the appearance of the local reaction constitutional symptoms are also seen. There is an increase of temperature, sometimes shivering, impaired appetite, accelerated circulation and respiration, diminished secretion of milk, a tendency to constipation, and a short frequent cough. This cough, which has been observed since inoculation was first practiced, and frequently noted, has been considered as an evidence of the infection of the whole body by this operation.

In the irregular cases the swelling rapidly increases its dimensions, encircles the tail, is tense, hot, and painful. The skin assumes a violet color, is covered with blisters, and the portion of the tail below the swelling becomes cold, insensible, dry, and hard. A groove forms at the union of the dead and living tissues, a separation gradually ensues, and the gangrenous part is finally lost. The lost part of the tail may be only a few inches of the lower part of this organ, or it may be nearly or quite the whole of it. This process of separation occupies a period of from one to three months, and after it has occurred the exposed surface heals very readily, the swelling gradually disappears, and a recovery soon follows.

Unfortunately, all of the irregular cases do not terminate so favorably. Frequently the swelling continues to increase; approaches nearer and nearer to the body; it invades the tissues at the root of the tail; abscesses form along the spine; the gangrenous swelling extends to the perineum, to the thighs, hips, loins, and even beneath the abdomen. The functions necessary to existence are arrested, vital organs are invaded, and death results. In a recent French report the following language is used:

> We do not speak of the symptoms, which are still more frightful, so horrible were the tortures endured by the unfortunate victims. With one of our inoculated animals in which we found an enormous dilatation of the heart, we were even led to ask ourselves if this accident was not the result of the sufferings, and particularly of the violent and incessant straining which exhaust the subjects. The sick animals have succumbed forty, fifty, and even sixty days after the inoculation. We have seen accidents which only made their appearance at the end of five or six weeks.*

The accidents following inoculation were formerly attributed to impure virus, *i. e.*, that which had been taken from a gangrenous lung or that which had been allowed to putrefy after its collection and before using. The experiments of Pasteur have shown, however, that this view was incorrect, that virus gathered and preserved with the greatest care may produce worse results than that which is obtained with less precautions and which is contaminated with atmospheric germs. He concludes that the fatal results are due to the activity of the essential virus of the disease, and that a mixture with foreign organisms tends to lessen rather than increase its effects. This generalization, like many others made by the great chemist, is doubtless founded upon insufficient data to be received as an invariable rule. Undoubtedly much depends upon the species and the physiological characters of the septic germs which contaminate the virus. Some like *bacterium termo* might lessen the virulence of the liquid, while others might produce one of the forms of septicæmia and thus add a serious complication. The surroundings

* Report of the military veterinarians to the minister of agriculture, 1884. *Rec. de Méd. Vét.*, September 30, 1885, p. 392.

and conditions of existence apparently have some effect upon the degree of the local reaction, and it is generally admitted that the effects are more severe in hot than in cold weather. Careful treatment is not without its influence upon the final result of inoculation. If the swelling is daily examined, and treated as soon as the first dangerous symptoms appear, by deep scarifications, cold applications, and antiseptic dressings, it can generally be controlled; but if this fails the life of the animal may still be saved by prompt amputation of the tail above the swelling.

Pathological anatomy of the inoculation tumor.—If a section is made through the inflammatory tumor that forms at the point of inoculation, it will be found that the skin is considerably thickened, and its interstices distended by an accumulation of yellowish lymph; the subcutaneous connective tissue is greatly thickened and its lymph spaces enlarged and filled with the same liquid. In the report of the military veterinarians to the French minister of agriculture, in 1884, they say:

With our animals which were victims of inoculation, we constantly observed the same anatomo-pathological process, that is to say, a progressive œdema, very hard and very plastic, which, in the first place, generally invades and mortifies the tail, and which afterwards extends to one and then to both sides of the sacrum, invades all of the connective tissue of the pelvis, and descends along the hips, thighs, and perineum, and reaches beneath the abdomen. In the abdominal cavity there is sometimes found an exudation, more or less abundant (as much as twenty quarts), of citrine, sometimes reddish serous liquid, or of gelatinous matter. There is also observed quite frequently partial congestions of the intestines, principally of the rectum, of the peritoneum, omentum, and mesentery. Around the organs of the pelvis and on the walls of this cavity there is generally observed yellowish fibro-albuminous masses, which resemble the pleural exudations. The hyperplasia is prolonged forwards, sometimes covering the wall of the abdomen about the psoas muscles.

A species of lardaceous and fibrous tissue is formed by an incoercible exudation of protoplasm into the subcutaneous connective tissue that surrounds and penetrates the muscles. The part invaded appears primarily to be only the seat of a simple inflammatory process, but as a result no doubt of the excessive compression that is produced by the continually increasing swelling, the arterial and venous vessels become completely obstructed; the circulation of blood, absolutely necessary to sustain life, is totally destroyed, and a more or less septic gangrene takes possession of all the tissues, both of old and new formation. These tissues become completely cold, and there remains no longer a trace of the muscles, these being so decolorized that they were confounded with the newly formed lardaceous tissue. The dissection revealed a picture of the most dreadful and irremediable disorders. The infiltration of the connective tissue around and penetrating the muscles recalls exactly the pleuro-pneumonia marblings of the lungs, which demonstrates that the morbid process has everywhere the same seat, the connective tissue, and that it is everywhere the same. In one case it chokes the pulmonary lobules and in the other the muscular bundles. All of the lesions are similar.

Sometimes the sections of the lymphatics of the affected region causes an abundant discharge of serum which had collected in these excessively distended vessels, some of which had attained the caliber of a goose quill.

The animals succumbed to a septic poisoning, when they were not carried off by the consequences of the absolute and invincible mechanical obstacle which resulted to the necessary functions of life.

* * * * * * *

The lesions were primarily pleuro-pneumonic, that is, exudative and plastic, and not septic. It was only consecutively and when the tissues had been prepared by a deadly ischæmia, that is, when the specific hyperplasia had produced a complete arrest of the circulation and death in the invaded region that the gangrenous complications are shown. When these gangrenous alterations were grafted upon the pleuro-pneumonic lesions, the latter had already condemned the subject to death, for they were sufficient to cause the fatal termination.—(*Loc. cit.*, pp. 392–394.)

Immunity by inoculation.—The practice of inoculation introduced by Dr. Willems was based upon the assumption that an animal rarely, if ever, has a second attack of pleuro-pneumonia, or in other words, that one attack of this disease protects the individual against it in the future. He stated in his communication to the Belgian minister of the

interior that since 1836 they had had in their stables more than 500 beasts affected with this disease; that many recovered with or without treatment, but he never observed that a recovered animal contracted the malady a second time. He considered a recovered ox of inestimable value since it braves with impunity all the dangers of contagion. He says there may perhaps be some exceptions to this rule, but if so they must be exceedingly rare.—(Veterinarian, 1853, p. 412.)

It will be seen from the above that the practice of inoculation is based upon the assumed facts, (1) that one attack of pleuro-pneumonia confers upon the animal immunity from subsequent attacks, and (2) that inoculation confers the same immunity that would result from an attack of pleuro-pneumonia. These assertions have been contested questions ever since Willems introduced the practice in 1852, and it is contended by many that we have not up to this time a sufficient accumulation of well-observed facts to allow of any accurate conclusions. There are, however, many observations recorded which bear upon certain aspects of the problem, and which, it is believed, will satisfactorily establish the points which it is for our interests to have decided. The questions first to be decided are those which relate to immunity, and it is necessary for us to inquire what proportion of cattle are naturally insusceptible to this disease, whether it is true that one attack confers immunity, and whether inoculated animals become insusceptible.

(1) *Proportion of cattle which resist exposure to the contagion.*—To decide this point we have the experiments of the French commission in which 46 animals were exposed, and of these 21 failed to show symptoms of the disease; we have the experiment of the United States Department of Agriculture, and the statistics of a number of European countries where the authorities have control over such disease. We may tabulate these statistics as follows:

Locality.	Year.	Exposed.	Sick.	Per cent.
Experiments of French commission	1852	46	25	54.4
Experiments of United States Department of Agriculture.	1884	56	30	53.5
Statistics, Elsass-Lothringen	1881, 1882	29	16	55
Statistics, Bavaria	1881, 1882	3,315	660	20
Statistics, Prussia	1881, 1882	10,154	1,856	18.3
Do	1882, 1883	8,875	1,953	22
Do	1883, 1884	11,171	2,750	24.7
Statistics, Kingdom of Saxony	1882	471	55	12
Do	1883	667	159	24
Statistics, Austria	1881	59,502	2,967	5
Do	1882	40,417	2,174	5.4
Total		134,703	12,645	9.3

The experiments of the French commission and of the Department of Agriculture represent the results of long exposure to the contagion. The statistics of Bavaria, Prussia, and the Kingdom of Saxony may be taken as about the average result when the diseased animals are taken from the herd and slaughtered soon after the first symptoms are observed. In these, 21.2 per cent. became sick. The statistics of Austria show an exceptionally small proportion of affected animals to the whole number exposed, and no explanation of this is found in the reports. It will be seen, therefore, that even when we consider the statistics, carefully compiled from large numbers of exposed animals, the results differ remarkably in different years and in different countries. With such variations, running all the way from 5 per cent. to 55 per cent., we are led to appreciate the difficulty of foretelling how many animals in a herd of given size will become affected after the disease has been recognized in one or

more animals. As a matter of fact, the variation in individual herds is much greater than would appear from the averages for the countries which have been given. Very often 90 per cent., and occasionally every animal in a herd, becomes diseased; and, on the other hand, the plague frequently stops with a single victim. It is stated by M. Leblanc that in the year 1883 there were in the department of the Seine twenty-three stables in which pleuro-pneumonia appeared and attacked one animal in each. There were in these stable 301 cows exposed which did not contract the malady.*

In any conclusions in regard to acquired immunity, it is, therefore, necessary to take into consideration the fact that a very marked proportion of cattle are naturally insusceptible to this disease and never contract it, and that others are able to resist exposure to the contagion for a long time before they become affected. For this reason it is impossible to judge of the effect of inoculation in controlling pleuro-pneumonia from the number of cases of the disease which develop in a few isolated herds after this operation has been practiced. It is only yb collecting the observations of years and by testing its effects in relieving a country of the plague that its value can be estimated.

(2) *Proportion of cattle which resist inoculation.*—An inoculation is said to be successful, or to "take," when after a certain number of days an inflammatory swelling appears at the point where the virus was inserted. This is the normal and regular result of an inoculation, but it does not, by any means, appear in every case. In reading the accounts of inoculation we are continually meeting with such instances as this:

Stresow, Kr. Jerichow I, of 36 oxen 5 sickened before inoculation and 9 afterwards. A reaction only appeared with two of those inoculated. On April 17, 65 cows were inoculated, among which up to that time no sickness had been observed. The inoculation did not take, &c.†

In attempting to reach some conclusions as to the natural immunity of animals, it is consequently proper that we should take into consideration the number which resist inoculation.

The figures which have been obtained bearing upon this question are not as numerous as we could desire, but still they are sufficient to give a very accurate idea of the result of inoculations in actual practice. M. Leblanc, in giving the effect of inoculations practiced in the department of the Seine, says he considers that from one-fourth to one-third of the animals show no reaction from the operation.‡ M. Cagny reported at the same meeting of Central Veterinary Society that M. Delamarre, of Acy-en-Multien, wrote to him that among the animals inoculated 25 per cent. of the operations appeared not to have succeeded.§ In the report of the military veterinarians to the French minister of agriculture they say that they have been far from always obtaining tangible local effects at the point of inoculation. The proportion of the cases of objective manifestations was scarcely 40 to 50 per cent., and they questioned if the inoculated animals which showed nothing were really invested with immunity.‖ M. Reynal collected the particulars of 22,848 inoculations, the results of which had been carefully recorded, and of these 16,512 were successful; that is, 72.4 per cent. were followed by a reaction, and 27.6 per cent. failed to produce any results.¶

From these statistics it is very plain that a large proportion of cattle

* *Rec. de Méd. Vét.*, Dec. 30, 1884, 439.
† *Neunter Jahresbericht*, &c., Prussia, 1885, p. 85.
‡ *Rec. de Méd. Vét.*, Mar. 30, 1883, pp. 92–93.
§ *Loc. cit.*, p. 126.
‖ *Rec. de Méd. Vét.*, 1885, p. 387.
¶ *Zundel in Dictionnaire of Hurtrel d'Arboval* III, 96.

are not only insusceptible to the effects of exposure to the contagion of pleuro-pneumonia when they are exposed to it in the ordinary way, but they are also insusceptible to inoculation with the virus. This immunity, from the results of inoculations, must also be taken into account in considering the value of this measure for prevention.

(3) *Animals that have a second attack of pleuro-pneumonia.*—One of the most important points to settle in the consideration of the immunity resulting from inoculation, relates to the degree of insusceptibility which is acquired from an attack of the disease contracted by natural methods of contagion. Vaccination as a preventive of small-pox and inoculation against various contagious diseases is based upon the observed fact that one attack of these maladies enables the individual to resist the contagion though subsequently exposed to it. The practice of inoculation as a protection against pleuro-pneumonia was founded upon the assumption that an attack of this disease was also followed by immunity from subsequent attacks. It becomes very desirable, therefore, to inquire if there is such an immunity acquired in this disease, and to what extent it can be depended upon as a protection.

Immunity does not appear to result in all contagious diseases from the effects of the pathological process. Thus tuberculosis is a contagious disease; it is usually slow in its progress and affords, as one would suppose, the most ample opportunity for the body to become invested with immunity; and, yet, we have no evidence that any such immunity is ever obtained. On the other hand, this disease progresses steadily for month after month, gaining continually upon the resisting power of the individual, and almost inevitably reaches a fatal termination. Now, the course of pleuro-pneumonia in some respects reminds us of tuberculosis. The period of incubation is long, the approach of the disease is slow and almost imperceptible, and after the acute symptoms have subsided the contagion lingers in the body for an indefinite time. In a case where an affected animal disseminates the contagion of pleuro-pneumonia for twelve or fifteen months after the last symptoms of disease were observed, it is reasonable to ask if the malady has not existed in a mild form during this time, and if the virus has not been multiplying in the animal's body. It certainly is not in accordance with the phenomena of other contagious diseases to admit that a virus which is not reproducing itself can retain its virulence in the animal body for so long a time.

Pleuro-pneumonia has been properly called a progressive disease; that is, it does not attack the whole of the lung at once, but it attacks a lobule or a certain number of lobules, and after an interval of days or weeks it extends to other lobules, so that in examining an affected lung we frequently find pathological changes which vary greatly in age. It is very common to find an animal quite sick with an acute attack of the plague, and in the lungs of which there are found, besides the recent changes, others which are of long standing, and which indicate that the beast had suffered from a similar attack several months before. Walley states that he has seen as many as seven distinct centers, varying in size from a walnut to a child's head, in the lungs of one animal; he also says the poison is not always eliminated from the blood after an animal rallies from one attack, and its presence may be manifested by a secondary attack if the animal is exposed to any fresh exciting cause, such as debility from overmilking, parturition, extremes of heat and cold, over exertion or impure atmosphere. He states without qualification that "one attack *does not* give immunity from another."*

* The Four Bovine Scourges, pp. 3, 5, 22.

The frequent extension of this disease to parts of the lung that had previously remained healthy, during or after convalescence from a first attack, is very generally admitted, but it is a fact which has not been made as prominent in our standard veterinary literature as would be warranted by the regularity of its occurrence and the important bearing which it has upon practical measures for prevention. A few examples will illustrate this: In the Seventh Prussian Report (p. 89), we are told that "in the province of Saxony there were frequently found in the lungs by the side of fresh disease changes, others also which were quite advanced and which certainly belonged to a lung-plague process a year old." In the Ninth Prussian Report (pp. 85–95), it is stated, in connection with an outbreak in Merseburg, that "in 4 oxen there were found old sequestra beside recent lesions." Also, in Querfurt, "on one place the lung plague had prevailed since the end of the year 1883; at that time the owner had sold 10 sick cows secretly and kept 4 oxen. The latter sickened in the second quarter of the year, and showed at the autopsy old sequestra in the lungs."

M. Leblanc reported to the *Société Centrale de Médecine Vétérinaire* that on May 16, 1882, he saw a case of pleuro-pneumonia at a slaughter-house which came from the stable of a breeder where the disease had prevailed for five years. The 18th he had 50 cows that were in the stable inoculated. Forty-two of them had been operated upon before, and among the rest a Dutch cow, which showed symptoms of disease February 3, 1883. *Post-mortem* examination made the following day showed in the lower part of the right lung an old lesion of pleuro-pneumonia and in the upper part a new lesion only a few days old. This cow had had two attacks of pleuro-pneumonia and had been inoculated twice, all within a year.*

M. Laquerriére records the following case:

> In a stable where 15 cows out of 30 were sacrificed in less than two months, I met with the following lesions in cow No. 5. Lesions recent and characteristic of pleuro-pneumonia in the posterior lobes of the lungs. In the median part and towards the inferior border of the left posterior lobe existed a center of very old lesions. The center was constituted by several very irregular cavities and contained a rather thick, grayish liquid. The walls of these cavities were very thick, whitish, and partly calcified, separating consequently in bony fragments under the instrument.†

Another case is recorded in one of the European reports as follows:

> On a farm a work ox several times presented symptoms of disease that were attributed to indigestion. Six months after its arrival it was slaughtered with an acute type of pleuro-pneumonia. It presented very old lesions from which the first attack would be placed more than six months earlier.

Cases similar to those detailed above are certainly met with very frequently in practice, but there does not appear to be any data collected from which we can determine the proportion of animals which make a partial recovery from pleuro-pneumonia and afterwards have a second attack of the same malady. We are, consequently, unable to reach any conclusion as to the degree of immunity acquired by an attack of this disease, or the length of time over which the protection extends.

(4) *Inoculation may take in animals that have had pleuro-pneumonia; reinoculation is also frequently successful.*—If an attack of pleuro-pneumonia confers complete immunity from the disease in the future, or if a successful inoculation confers such immunity, it is manifest that inoculation should have no effect on animals that have passed through one

* *Rec. de Méd. Vét.*, Mar. 30, 1883, p. 91.
† *Rec. de Méd. Vét.*, 1885, p. 93.

attack or that have been previously inoculated. So far from this being the case, however, it has been observed from the first introduction of the practice of inoculation that a second or third inoculation may take equally well with the first, that animals having passed through the disease may be successfully inoculated, and that the inoculation swelling and the lung lesions may exist in the same individual at the same time, and each be as intense as though but one of these processes affected the animal.

In the summary of the results obtained by the Belgian commission, as given in their report of 1853, it was stated:

That the phenomena succeeding inoculation may be produced several times in the same animals, which may or may not have been attacked with exudative pleuropneumonia. That the two affections may exist together in the same individual, and that considerable derangements are manifested in the inoculated part, whilst the morbid action of the lungs progresses towards a fatal termination.—(Veterinarian 1853, p. 453.)

Professor Simonds in his report to the Royal Agricultural Society, refers to M. Maris, a veterinarian at Hasselt, Belgium, and a member of the commission appointed by the Government, who stated that, "of 50 animals successfully inoculated at first, 25 took by a reinoculation. A cow successfully reinoculated at St. Trond had the natural disease ten days afterwards."* Professor Simonds gives the following statement in regard to his own experiments:

We selected seven of the most satisfactory cases from out of the fourteen inoculated *direct* with fluid from the lungs, to give trial to reinoculation. *On four of these the reinoculation produced morbid action equally as great as the original inoculation; on the others it failed.*†

Oemler states in his recent article on inoculation that Kreuzer had observed after the second and even after the third inoculation a plainly perceptible swelling, and that he (Oemler) had frequently met with similar cases. In the recent experiments made at the veterinary school of Berlin, it was found that a reactionary swelling might develop after the second and also after the third inoculation. Cagny and Zundel at the Fourth International Veterinary Congress each spoke of cases where the so-called control inoculation had produced death.‡

The cause and significance of the local swelling following inoculation was for a long time in doubt and served to produce a great divergence of opinion. Some held that the inflammation at the point of inoculation was due to the multiplication of the lung plague virus; that it was an index of the activity of that virus, and that no immunity was conferred without it. Others believed that the local swelling was due to a contamination of the inoculated material with putrid matter or with septic germs from the atmosphere or other outside sources. For those who held this belief, a local reaction was not necessary for the production of immunity. The more recent experiments of Pasteur seem to demonstrate that the former view was correct, and that the swelling is due to the activity of the virus and is not the result of any contamination. This leads unavoidably to the conclusion that such reaction is necessary for the production of immunity; and such advocates of inoculation as Willems and Bouley admit that inoculation should be repeated until a reaction no longer follows the insertion of the virus, and that then there is complete insusceptibility.

* Veterinarian, 1853, p. 165.

† Veterinarian, 1853, p. 458.

‡ Concerning the inoculation and stamping out of lung plague, by Department Veterinarian Oemler, Merseburg. *Archiv f. wissensch. u. prakt. Thierh., vol. x,* p. III.

(5) *Immunity conferred by inoculation.*—This leads us to a consideration of the immunity which follows inoculation. We have seen from the facts mentioned above that there are cases where immunity is not conferred by this operation, and we will next refer to those facts which show that in many instances the inoculated animals do become more or less insusceptible.

Under date of September 14, 1852, Dr. Willems wrote to the director of the Central Society of France, stating that since April 29 of the same year there had been inoculated in the stables of the distillers of Hasselt 1,350 animals, of which 11 succumbed from the effects of the inoculation, and only one had contracted pleuro-pneumonia. He said further that this disease had departed from the town of Hasselt as the result of his inoculation.*

The following summary of the European experiments most favorable to inoculation is taken from Oemler's recent article:†

Two old cows, selected and inoculated by Willems in 1852, which were apparently healthy, were placed first in a herd which was extensively diseased, and later into an experimental stable in which there were also animals sick with lung plague. Nevertheless, "the health of these cows was affected in no manner." (*Ibid., s.* 82 *u.* 87.)

According to their first report the Belgian commission experimented with 16 beeves, of which half were taken from places free from lung plague. The first inoculation performed by Willems resulted in a local reaction with only 7 animals, while in the remaining 9 repeated inoculations did not succeed. All 16 beeves were for a long time exposed and placed in contact with lung plague animals in the veterinary school at Cureghem. They remained, nevertheless, free from lung plague, although several of them were placed later in infected stables.—(*Rec. de Méd. Vét.*, 1854, p. 245; *Kreutzer a. a. O. S.*, 86 *u.* 287; *Oesterr. Vierteljahresschr. f. wissensch. Veterinärk.*, 4. B., 1. H., 1854, S. 58.)

According to the thirtieth report of this commission "none of the 6 inoculated or uninoculated animals" which were, during another experiment placed for nine months in an infected stable, showed the slightest symptoms referable to lung plague. —(*Oesterr. Vierteljahresschr. f. wissensch. Veterinärk.*, 9 *B.*, 8 *H.*, 1857, *S.* 88.)

According to the fifth report of this commision Willems inoculated of 20 experimental animals (14 cows, 5 oxen, and 1 steer), 10 animals (5 cows, 5 oxen) with success. All 20 animals were placed partly in stables of the veterinary school with animals sick with lung plague, and partly in thoroughly infected stables. Of these 4 had lung plague, and, moreover, one of the inoculated cows longer than five months after inoculation and 3 non-inoculated animals. The 16 animals remaining healthy were sold by order of the Government.—(*Oesterr. Vierteljahresschr. f. wissensch. Veterinärk.*, 11 *B.*, 2 *H.*, 1858, *S.* 120.)

According to the second report of December 28, 1853, the Holland commission made experiments at the veterinary school at Utrecht at which 20 cows were used which were drawn from places free from lung plague at all times, or for several years past. There were purchased also several additional animals which were used partly for the purpose of investigating other questions with reference to lung plague inoculation which were, in part, already inoculated and in infected stables, and which, therefore, cannot be taken into consideration here. Of these 20, which were carefully observed for a few days and were found entirely healthy, 15 were subjected to inoculation, while the remaining 5 cows remained not inoculated. In all cows there was a more or less severe local reaction as a consequence of inoculation. In an old milch cow there appeared on the 8th day after inoculation a severe and extensive swelling which reached such a high degree that the cow died 26 days after the operation. After all the phenomena as a consequence of inoculation had disappeared, all the experimental animals, among which were these 14 inoculated and 5 uninoculated, were placed in a single stable. Into the same stable there were placed from the 16th September on, one after another, 6 more or less severely diseased animals, of which 4 died and were found affected with lung plague. The sick animals were distributed among the inoculated and uninoculated in such a manner that they could come in direct contact with all of them. The fodder which had been left by the sick animals and soiled with the saliva was consumed by the inoculated and uninoculated. From October 24 to November 3, *i. e.*, 5½ to 7 weeks after the introduction of the first sick animals into the

* Veterinarian, 1853, pp. 90–92.

† Concerning the inoculation and stamping out of lung plague. *Archiv. f. wissensch. u. prakt. Thierh., vol. x*, p. 207.

stable, all 5 non-inoculated animals took sick, of which 4 died and were found with the characters of lung plague on *post-mortem*, while the disease of the 5th cow could not be definitely determined, but was very likely lung plague in a very light degree. Of the 14 inoculated animals there appeared no symptoms pointing to lung plague up to December 28, therefore within the time of more than 3 months after the infection of the experimental stable.—(*Centralzeit f. d. ges. Veterinärmed, etc., v. Kreutzer*, 3 *Jahrg.*, 1853, S. 22, 26, 35, 44, 51, 60, *u.* 67; *Kreutzer, a. a. O. S.* 75 *u.* 282; *Oesterr. Vierteljahresschr. f. wissensch. Veterinärk*, 4 *B. L. H.*, 1854, *S.* 61; *Rec. de Méd. Vét.*, 1854, p. 244.)

According to the third report of the Holland commission they began a second series of experiments on the 30th of August, 1853, with 30 cattle, of which 26 were inoculated, 6 with primary lymph, 10 with secondary lymph of the twentieth generation, and 10 with secondary lymph of the third generation. With these 26 inoculated beeves, of which 12 remained insusceptible after the first and second inoculation, as well as with 4 non-inoculated beeves, there were placed one after another 10 animals sick with lung plague. Three non-inoculated and 3 inoculated cows took sick with lung plague, of which two, after inoculation with primary lymph had reacted sufficiently, while with the third, after inoculation with secondary lymph, the reaction had also appeared.—(*Oesterr. Vierteljahresschr. f. wissensch. Veterinärk.* 2 *H.*, 1857, *S.* 100.)

The French commission made the following experiments: They placed in the stable of a dairy farm at Maisons-Alfort 13 healthy non-inoculated animals from a place where pleuro-pneumonia had never prevailed, as well as a new born calf from one of these cows, upon one side, and 13 animals inoculated with success and having lost thereby part of the tail, were placed upon the other side. Between these experimental animals were placed 11 cows sick with lung plague. Among the inoculated ones no disease symptoms appeared within the next five months, although of the non-inoculated animals only 5 were spared from the plague. In another barn of the preceding dairy farm there were placed 9 animals inoculated according to Willems' method, and 1 cow inoculated with filthy water in the tail in contact with 3 diseased animals. The inoculated animals remained entirely healthy during the following five months.

At Charentonneau there were placed in a stable 11 animals inoculated with success and 11 completely healthy uninoculated animals, and among these 4 animals sick with lung plague. From December 12, 1852, to March 16, 1853, the experimental animals were apparently healthy. When, however, all 22 animals were slaughtered, of the 11 non-inoculated ones 6 contained the characteristic appearances of advanced lung plague, while the remaining ones were completely free from the plague.

In another stable of the farm at Charentonneau there were placed 12 inoculated animals, which were fed by the same man who had the care of the experimental animals. Of these 12 animals one took sick with lung plague. The remaining 11 showed entirely healthy lungs on slaughter.—(*Rec. de Méd. Vét.*, 1854, *p.* 221–232; *Oesterr. Vierteljahresschr. f. wissensch. Veterinärk.*, 6. *B.*, 1. *H.*, 1855, *S.* 66.)

By the request of the agricultural society of the department Puy-de-Dôme, there were placed in 1852 4 cows which had been observed several days and found healthy, and which had been inoculated, with one uninoculated cow by the side of several diseased ones. The mucus flowing from the nose and mouth was rubbed upon their noses. The inoculated animals remained healthy while the uninoculated took sick.—(*Oesterr. Vierteljahresschr. f. wissensch. Veterinärk.*, 9. *B.*, 1. *H.*, 1857, *S.* 30.)

Eight beeves (4 oxen, 4 cows) were purchased by the agricultural society of the circle Ober-Barnim on December 7, 1852. On January 22, after they had been repeatedly examined and found healthy, they were inoculated on the tail, at which the reaction appeared in all animals, in 3 only slightly, which reaction had disappeared at the beginning of March. On the 1st of April of the same year inoculation was repeated with 5 animals on the tail, and with 3 others by drawing a thin band saturated with lung plague lymph through the "triel." The tail inoculation developed local symptoms only, with 3 animals inoculated with the lancet, but not with the 2 others which had been inoculated with an ordinary needle used for sheep-pox inoculation. After the "triel" inoculation there appeared with all 3 animals a large, hard swelling, which disappeared only in six to eight weeks. When the symptoms of the second inoculation had completely disappeared, all 8 animals were placed with animals sick with lung plague for months into infected stables, and put into contact with them in various ways. Toward the end of March, 54 of the experimental animals were completely healthy, and as far as I could learn from later report they have remained free from the plague.—(*Armaten d. Landwirthsch. in d. Konigl. preuss. Straaten V. Dr. Ludersdorff*, 12 *Jahrg.*, 24. *B.*, 1854, *S.* 329. Two experimental animals were slaughtered in the summer of 1854, up to which time they had remained in an infected stable, and were found free from lung plague.—(*Mag. f. d. ges. Thierh.*, 22 *Jahrg.* 1856, *S.* 20.)

According to a report of the committee of the agricultural society previously mentioned, 4 head of cattle (2 oxen, 1 cow, 1 heifer) were brought from a region where lung plague had not prevailed, as far as was known. These animals were inoculated

with a fluid taken from an inoculation swelling, *i. e.*, with secondary lymph, three times, on the 27th of June, 8th of September, and 18th of October. Only after the first inoculation there appeared in the third week a very slight rise of temperature and a scarcely perceptible swelling at the site of inoculation. At the end of November the experimental animals were placed with animals sick with lung plague, and up to April 14, 1885, they showed no appearances of lung plague, although they had been exposed to the contagion for a period of five months.—(*Mag. f. d. ges. Thierh.*, 22 *Jahrg.*, 1856, *S.* 20.)

At the instigation of the Commercial and Industrial Board in Paria, a commission was appointed which, in January, 1853, placed 2 animals inoculated with success and 2 quite healthy uninoculated animals in a stable with diseased cattle. The inoculated animals remained healthy, while the others succumbed to the plague a month later.—(*Rec. de Méd. Vét.*, 1854, *p.* 579; *Oesterr. Vierteljahresschr. f. wissensch. Veterinärk.*, 5. *B.*, 1. *H.*, 1855, *S.* 73.)

By the order of the royal Bavarian ministry there were inoculated on the 22d February, 1853, at the central veterinary school of Munich, 3 young cows which had been bought in regions free from lung plague, and had shown themselves completely healthy during the observation of five months. Since no reaction had appeared in these animals at the end of thirty days, the inoculation was repeated more thoroughly on the 23d of March, at which 1 cow developed such a severe inoculation swelling that the end of the tail became necrotic and had to be amputated. With the other 2 cows, on the other hand, the inoculation resulted again in no visible swelling at the site of inoculation. After the swelling of the remainder of the tail in a cow inoculated with success had completely disappeared up to April 21, this animal was placed on this same day in an infected stable, where it remained six weeks without showing symptoms of lung plague. The 2 other cows were not exposed to a natural infection, because it was assumed that they possessed no susceptibility for the lung-plague contagion.

At the same veterinary school there were inoculated on the 28th April, 1853, 3 additional cows, in which such a severe local reaction appeared that the end of the tail was lost. These cows were brought into a special stable, where they had among them uninterruptedly for six weeks a cow sick with lung plague. Nevertheless these cows were not infected. The third cow inoculated with success was placed in an infected stable among diseased cattle, where it was still in a healthy condition four weeks afterwards.—(*Kreuzer a. a. O. S.*, 304.)

By order of the Prussian Minister of Agriculture, Domains and Forests, of 11 head of cattle which had not yet been exposed to the contagion of lung plague, 6 were repeatedly inoculated (2 cows, 2 heifers, 2 calves). All these animals were exposed repeatedly in different stables to animals sick with lung plague. Although most of them, also the inoculated animals, coughed more or less frequently, and one cow showed itself sickly, lung plague was diagnosed at *post-mortem* in only one uninoculated calf, which was already diseased during life. In all the other animals which were slaughtered after they had been exposed from 2½ to 13 months to the danger of infection, no changes characteristic of lung plague were observed.—(*This archiv*, 9 *B.*, 1883, *S.* 206.)

The following experiments of the commission of the *Société Centrale de Médecine Vétérinaire*, composed of Bouley, Cagny, Leblanc, Mollereau, and Nocard have an important bearing on this question.* Four Swiss cows were selected from the stable of M. Burgi, of Charenton. All the cows had been previously inoculated by the owner. Two of the 4 were inoculated at the lower extremity of the tail by injecting ten divisions of Pravaz' syringe hypodermically, the 18th of July. Virus had been collected by M. Pasteur's process; the point of inoculation was seared with a hot glass rod before and after inoculation. The remaining 2 were also inoculated at extremity of tail, but with a lancet, and with virus taken directly from the lung.

This same virus was used by Pasteur and Mollereau in experiments at Vincennes, and its virulence was shown by the death of several of the animals.

The only result with the 4 cows used in this experiment was a slight sensibility at the point of inoculation with one of those inoculated with the lancet. There was no elevation of temperature with any of them.

* Reported at seance of January 25, 1883. *Rec. de Méd. Vét.*, Feb. 28, 1883.

August 26, each of these cows was inoculated by injecting into the subcutaneous cellular tissue in front of the left shoulder ten divisions of Pravaz' syringe of pleuro-pneumonia virus diluted with a little boiled water. The virus had been collected in Pasteur's tubes from the lung of a cow killed the same morning.

August 28, No. 3 had elevated temperature 39°.5.

August 29, temperature reached 40°.1; no local reaction.

August 30, temperature 39°.9 in the morning.

August 31, temperature 38°.4 in the evening.

September 6, twelve days after inoculation, a swelling was noticed at point of inoculation with No 4, elongated, extending from above downwards, the size of an infant's arm. Temperature, 39°.2. All have good appetite.

September 10, the swelling is 25 centimeters long by 10 across, and apparently 4 or 5 deep. Remained stationary until the 13th and disappeared by the 18th.

Nos. 1 and 2 remained in perfect health.

SECOND EXPERIMENT.

Thirteen bovine animals, previously inoculated by M. Pasteur, were inoculated in prohibited regions. They were inoculated August 26 with the same virus used in the former experiment. Two received the virus by lancet punctures behind the shoulder, 11 had hypodermic injections of five divisions of Pravaz' syringe in the subcutaneous cellular tissues behind the shoulder. Nine cows, not previously inoculated, were inoculated in the tail with the same virus to test its activity. Two of the second lot had some swelling at the point of inoculation. There was no change of temperature. With the cows inoculated in the tail there was local reaction in all, one losing its tail.

Some of this virus preserved according to Pasteur's method was used for inoculating a calf September 22. Five divisions of Pravaz' syringe was injected under the skin at the base of the neck. The temperature was 40°.4 the 24th, with local swelling the 27th, increasing and followed by loss of appetite with death on October 5.

Section of the tumor showed it to be composed of a mass of yellow tissue, soft and friable, from which flowed a very abundant, yellow, and limpid serum. There was no trace of hepatization of lungs or inflammation within the abdominal cavity.

The commission concludes from these experiments, "that the insertion of pleuro-pneumonia virus in the tissue of the skin (lancet inoculation), or in the subcutaneous cellular tissue (inoculation with Pravaz' syringe) confers upon the inoculated animals immunity against contagious pleuro-pneumonia."

The facts brought out by these experiments, and many others of a similar nature which will be given further on, while they are open to criticism and fail to satisfy all, still indicate very clearly that when properly performed, inoculation does confer immunity on a certain proportion of the animals operated upon. This conclusion must be reached without any regard to our opinions as to the nature of the pathological process which occurs in the tail as a consequence of inoculation; it follows from the fact that a much larger proportion of inoculated animals are able to resist lung plague than is the case with those that are not inoculated; in other words, it is a problem which can be and should be decided as a question of fact rather than as a question of doctrine. But

we should not be led to the other extreme and decide hastily that because inoculation grants immunity in many cases that it is, therefore, an operation which can be unreservedly recommended, or that it is in any sense a useful practice. Before a conclusion as to the beneficial effects and desirability of lung plague inoculation can be reached, it is necessary to consider other facts connected with it, and particularly the results which have followed its introduction into other countries.

(6) *Immunity does not immediately result from inoculation.*—An important question connected with any inquiry into this subject relates to the period which elapses after inoculation before immunity is acquired. Evidently there is no immunity until after the inoculation swelling has made considerable progress, for otherwise there would be no swelling since this does not occur in insusceptible animals. If we should admit, as it seems to me we must, from recent developments of germ investigations, that the local reaction is a result of the local multiplication of the virus, that it is an index of this multiplication, and that the immunity results from this process, then it seems plain that immunity is not gained until about the time when the local reaction begins to disappear.

As stated above, the local reaction may make its appearance within two or three days, but as a rule it is from ten to fifteen days before it is seen, and it is from two to four weeks—sometimes much longer—before it disappears. When, therefore, inoculation is practiced in an infected stable the animals operated upon must be exposed to the contagion a very considerable time before they can be expected to have gained any increased power to resist it.

The extreme advocates of inoculation have contended that this practice was not only preventive but curative, and that its benefical effects began as soon as the operation was performed. Some, with Willems, have contended that the action of the virus when inoculated was a kind of *dynamisation;* that the virus introduced in the tail is absorbed, enters into the blood, acts upon this, modifies it, and so influences all organs that it renders them incapable of contracting pleuro-pneumonia.* According to such views a local reaction was unnecessary for the production of immunity, and the animal should be protected at once. In the light of modern investigations such theories seem crude and unscientific, and they would not be referred to here but for the fact that they still have many advocates.

As a matter of fact, a considerable number of infected animals contract pleuro-pneumonia after inoculation. Much the larger part of these sicken within two or three months after the operation, and it is consesequently assumed that they were infected before they were inoculated. To explain this fact, it is now admitted by many that animals infected before inoculation contract the disease as though they had not been inoculated.

The records of official inoculation in Europe do not appear to have been kept with very great care, except in occasional instances. Generally we are told that inoculation was practiced with great success, or that inoculation greatly diminished the losses, or that the disease was checked by inoculation, or that inoculation had no effect, but the statistics of the number affected, the number operated upon, the number of animals affected before and after inoculation, have not always been produced, and, consequently, the report cannot be utilized in a scientific inquiry. There are some notable exceptions to this rule, however, which will now be referred to.

* Veterinarian, 1853, p. 90.

M. Cagny gives the following statistics of inoculation for 1881 and 1882:*

Department.	Number sick before inoculation.	Number inoculated.	Deaths from inoculation.	Cases of pleuro-pneumonia after inoculation.
Senlis	20	318	3	31
Clermont	9	150	.....	3
Beauvais	9	35	.....	3
Total	38	503	3	37

M. Leblanc has given the statistics of inoculation in the department of the Seine for 1882, as follows:† Number inoculated, 528; number lost after inoculation, 129. M. Mollereau gives the particulars of his inoculations near Paris from June, 1883, to September, 1884, as follows: Number inoculated, 322; died from inoculation, 1; slaughtered because affected with pleuro-pneumonia, first week after inoculation, 13, second week 9, third week 3, fourth week 4, later than fourth week 3.‡ M. Heu reports the results of 360 inoculations from 1860 to 1881. Of this number inoculated 13 afterwards contracted pleuro-pneumonia and died, and 15 contracted it and recovered.§

M. Verrier, of Provins, gave the following experience: In 1881, fourteen stables were observed by the veterinarians of the sanitary service, in which pleuro-pneumonia existed. In these stables 251 animals were sick or had been exposed, 129 were slaughtered because of the disease, 19 died, and 22 recovered. Of the animals in these stables 199 were inoculated, of which 116 afterwards contracted lung plague and were slaughtered, and only 83 resisted it. M. Savary reported that pleuro-pneumonia appeared in the stables of M. Giot, where there were 97 fattening animals. All were inoculated, but all, without exception, sickened one after another, and it was necessary to slaughter the whole herd. With another farmer pleuro-pneumonia appeared in July and in spite of inoculation and reinoculation continued until October, when the last 1 became sick and was killed.|| The statistics of the department of Seine-et-Marne for 1881 were thus given by M. Verrier; number inoculated, 209; number sick before inoculation, 19; sickened and were slaughtered after inoculation 120.¶ In the Sixth Prussian Report (1881–1882, p. 75) it is stated that 113 head of cattle were inoculated in Naulin and 147 in Megow. In both herds the usual inoculation reaction appeared. Nevertheless, between February 13 and April 22, there became sick of those in Naulin 66 and of those in Megow 41, with such severe attacks that they had to be slaughtered by order of the authorities. That is of 260 animals inoculated 107 afterwards contracted a severe form of pleuro-pneumonia. In the Kingdom of Saxony during 1883, 471 exposed animals were inoculated, and of these 52 afterwards contracted the disease.** In the table given by Reynal, where 22,848

* *Rec. de Méd. Vét.*, Mar. 30, 1883, pp. 128, 129.
† *Rec. de Méd. Vét.*, Mar. 30, 1883, pp. 98–101.
‡ *Rec. de Méd. Vét.*, Dec. 30, 1884, p. 436.
§ *Rec. de Méd. Vét.*, Mar. 30, 1883, pp. 87–89.
|| *Rec. de Méd. Vét.*, Mar. 30, 1883, pp. 83–85.
¶ *Rec. de Méd. Vét.*, 1883, Mar. 30, p. 120.
** *Bericht über das Veterinärwesen im Königreich Sachsen für das Jahr* 1885, p. 65.

inoculations are grouped together, we find that 2,224 afterwards contracted pleuro-pneumonia.*

Now, if we group together the facts referred to above we will see that a very considerable proportion of inoculated animals afterwards contract lung plague.

Cases reported.	Number inoculated.	Number afterwards sick.	Proportion of inoculated which sickened.
			Per cent.
M. Cagny	503	37	7.3
M. Leblanc	528	129	24.4
M. Mollereau	322	32	10
M. Heu	360	28	7.7
M. Verrier of Provins	199	116	58.3
M. Savary	97	97	100
M. Verrier, Seine-et-Marne	209	120	57.4
Sixth Prussian Report	260	107	41.1
Naulin and Megow, Kingdom of Saxony	471	52	11
Reynal's tables	22,848	2,224	9.7
Total and average	25,797	2,942	11.4

These statistics demonstrate that immunity is not immediate and absolute after inoculation, but that a very remarkable number of deaths occur among inoculated animals, from the disease which this inoculation is designed to prevent; and that however favorable inoculation may appear to be in isolated cases, when the statistics of large numbers are gathered together this favorable showing largely disappears. Our object in this paragraph, however, is not to discuss the utility of inoculation, but to bring out facts bearing upon the question of immunity as produced by inoculation, and to make it plain from the result of a large number of inoculations that this practice is not so speedy and certain in its results as has been supposed.

(7) *Successful inoculation and even reinoculation does not always protect* — The inoculations referred to above are such as are made in practice, and we have no evidence there to show that the deaths occurred in animals that had been successfully inoculated, that is, with those that had shown a local reaction, or that a sufficient period had elapsed after the operation for immunity to be acquired. A few cases only will be given in detail here to show that the deaths among inoculated animals are not confined to the period immediately following inoculation or to those animals in which no local reaction followed the operation.

In the herd of Mr. Charles Paget all the animals, amounting to about 100, were inoculated by Professor Simonds. The inoculations were not all made at the same time, but extended over a period of several weeks, the whole herd being operated upon by the end of February, 1853. During February 4 cows sank from pleuro-pneumonia, 2 of which had been inoculated and 2 had not. In May, or more than two months after the last animals in the herd were operated upon, three deaths occurred, all being inoculated animals.†

M. Leblanc's tables contain the following facts: In a herd of 27 animals, inoculated January 14, there were two new cases of disease near the end of the year. In a herd of 22, inoculated October 7, and rein-

* *Zundel in Dictionnaire de Hurtrel d'Arboval*, III, p. 96.
† Veterinarian, 1853, p. 459.

oculated October 31, there were losses on November 12, January 23, and February 11. In a herd of 58, reinoculated March 19, there were losses on March 27, April 21 (2), June 8, January 3, and February 3. One cow that had been twice inoculated showed, on *post-mortem* examination, both old and recent lesions, having had two attacks of the plague in spite of a double inoculation. In a herd of 78, inoculated March 31, there were deaths in May, June, and July. In a herd of 15, inoculated March 11, there were deaths in May and August. In a herd of 15, inoculated March 1, there were deaths in July, August, and September. In another herd, inoculated March 11, there were losses in May, August, and November. In one of 30 animals, inoculated April 17, there were deaths in July, August, and September.*

Speaking of a farm at Rhode-Saint-Genese, Brabant, Belgium, Dr. Wehenkel says that in spite of the inoculations and reinoculations to which they had recourse during a number of years, this disease continued to maintain itself there, and it was only when they decided upon a rigorous execution of the prescribed measures (slaughter) that it almost completely disappeared in a short time.†

In the Ninth Prussian Report we are told during the year from April 1, 1884, to March 31, 1885, 22 head of cattle took sick in Merseburg which had been successfully inoculated in April or September, 1883. Two of these had lost half their tails in consequence of the operation. During the same year in Eptingen 63 out of a herd of 78 inoculated in 1883 had to be killed by order of the police, because diseased.‡

In the eighth report we are told that in Loderburg, Kr. Kalbe, the plague continued from the preceding quarter; triple inoculation had no effect upon its course (p. 87). In the sixth report it is said that in Beuchlitz, circle Merseburg, there was a herd of 168 head of cattle which had been inoculated on May 11, November 24, 1881, and February 3, 1882. Of 10 head killed in the fourth quarter (January, February, and March, 1882), 3 had been inoculated twice and 7 three times. Of 6 cows sick with lung plague in Lauchstedt, circle Merseburg, some had been inoculated twice, others three times. In Kirchbain, Landkreis Erfurt, preventive inoculation was practiced upon 121 head about June 30. After twenty-one days a mild swelling appeared at the end of the tail in all animals; 1 cow died in consequence of gangrene of the tail, and with 2 a part of the tail had to be amputated. On October 27 and November 24 a cow sickened each day. In both a swelling of the tail had appeared after inoculation, and in one of them it was so severe that the end of the tail dropped off (p. 81).

The following cases, which are of much interest in this connection, are taken from Dr. Oemler's valuable article on inoculation (*loc. cit.*, pp. 99–103):

In March the cattle of an estate near which lung plague was prevailing were inoculated preventively. The inoculation swellings were in general very intense, so that several head died of the result of the operation. Nevertheless lung plague broke out among the inoculated animals in July, from which in a few weeks 12 head became sick and 2 died.—(*Mittheil. aus. d. thierärztl. Praxis, &c.*, 6. *Jahrg.* 1859, *S.* 38.)

Protective inoculation was resorted to in the beginning of December in the case of 40 head of cattle of an estate in the vicinity of which lung plague was prevailing. Nevertheless the plague appeared at the end of February, although thereupon those animals which had not developed inoculation swellings were inoculated again, yet the plague continued to the month of July. Among 12 head the disease reached a high grade, whilst all the remainder were only slightly affected. One cow which had lost a part of her tail in consequence of the first inoculation became severely ill at the end of June.—(Roloff, *a. a. O.*, *S.* 21 *u.* 22.)

* *Rec. de Méd. Vét.*, Mar. 30, 1883, pp. 98–101.
† Belgian Report, 1882, p. 47.
‡ *Neunter, Jahresbericht der königl. tech. Dep., &c.*, pp. 85–95.

In two stables 29 head of cattle were inoculated with such success that the plague appeared immediately checked. But seven to ten months after the inoculation the plague broke out again, and 14 of the 29 inoculated animals took sick.—(*Roloff a. a. O., S.* 21 *u.* 22.)

In another stable the cattle were inoculated on the 19th of July; up to the 1st of August, 7 head died, and then five months after the inoculation the plague broke out anew and in a very severe degree.—(*Roloff, a. a. O., S.* 21 *u.* 22.)

In a herd of an estate of 48 head, which had been inoculated the plague broke out anew, so that of the 43 diseased animals 27 died.—(*Mittheil. aus d. thierärztl. Praxis &c.*, 16. *Jahrg.*, 1869, *S.* 58 *u.* 71.)

A thoroughbred herd of 300 head was inoculated in 1866, and a number of other cows in 1867, with apparently favorable result. In the beginning of March the plague broke out among the inoculated animals, which spread more and more and continued so violent that the entire herd had to be slaughtered.—(*Mittheil. aus d. thierärztl. Praxis, &c.*, 16. *Jahrg.*, 1869, *S.* 58 *u.* 71.)

In a herd which had been inoculated four months before with success nearly half the animals gradually sickened, all of which, however, recovered excepting 2 which had to be slaughtered.—(*Ibid.*, 20. *Jahrg.*, 1873, *S.* 62.)

Of 30 cows which an experienced physician had inoculated in the spring, 6 cows took sick from the beginning of September to the end of March, all of which bore the plain marks of a strong local reaction of the inoculation.—(*Mag. f. d, ges. thierhlk.*, 39. *Jahrg.*, 1873, *S.* 240.)

Lung plague prevailing among cattle of an estate, 60 head of cows standing in a special stable were inoculated on the 12th December. The inoculation had the best result, but in spite of this in the following May the plague broke out so violently among the cows that 18 had to be slaughtered.—(*Mittheil. aus d. thierärztl. Praxis, &c., neue Folge* 1. *Jahrg.*, 1876, *S.* 39 *u.* 40.)

When three months ago lung plague among a herd had apparently died out, 25 cows were bought and immediately inoculated, whereupon very distinct reaction took place, but half a year later the inoculated cows sickened one after another, of which 6 had to be slaughtered.—(*Mittheil. aus d. thierärztl. Praxis., &c., neue Folge,* 1. *Jahrg.*, 1876, *S.* 39 *u.* 40.)

In another case inoculation was resorted to immediately upon 24 newly-purchased cows, in which distinct reaction took place. Two to three months later, however, lung plague broke out among the cows, lasting the entire winter, and in consequence of which 6 cows had to be slaughtered.—(*Mittheil. aus d. thierärztl. Praxis, &c., neue Folge,* 1, *Jahrg.*, 1876, *S.* 39 *u.* 40.)

Among a herd of 200 belonging to a sugar factory lung plague existed for a year and a half in spite of repeated careful inoculation. There took sick from time to time after longer or shorter intervals now one head, now several, which were immediately sold to the butcher.—(*Mittheil. aus. d. thierärztl. Praxis, &c., neue Folge,* 1 *Jahrg.*, 1876, *S.* 40.)

Although 40 newly-purchased cows were inoculated apparently with success lung plague broke out seven months later, of which 15 head and 4 calves from cows severely diseased were attacked.—(*Ibid.*, 2. *Jahrg.*, 1877, *S.* 57.)

Among 94 beeves inoculated in February, of which individual animals had been inoculated twice during the past two years, lung plague was diagnosed on the 9th of December of the same year, in consequence of which up to September 30, 17 head had to be slaughtered.—(4. *Jahresber. d. königl. tech. Dep. f. d. Veterinärw. üb. d. Verbreit. ansteck. thierkr in Preussen*, 1882, *S.* 50.)

On a farm with 53 head of cattle lung plague demanded numerous victims, although the entire herd had been inoculated three months before.—(*Mittheil. aus. d. thierärztl. Praxis, &c., neue Folge,* 7. *Jahrg.*, 1882, *S.* 14.)

In a starch factory, 22 cows were inoculated in June, in which a reaction appeared in three weeks. The plague appeared exterminated, but four to five months later it appeared anew, in consequence of which over half the herd was affected very severely and had to be slaughtered.—(5. *Jahresber. d. Königl. tech. Dep. f. d. Veterinärw. üb. d. Verbreit. ansteck. thierkr. in Preussen*, 1882, *S.* 50.)

In two estates belonging together, 260 head of cattle were inoculated in the middle of February, among which to the end of April, 107, and between April and June, 19 were affected with lung plague, although among all animals the customary reaction had appeared.—(*This archiv S. B. S.* 367 *und* 6 *Jahresber. d. Königl. tech. Dep. f. Veterinärw. üb. d. Verbreit. ansteck. thierkr. in Preussen*, 1882, *S.* 50.)

Circle veterinarian, Kloos, has made observations like the preceding very frequently according to his veterinary sanitary reports. He saw animals which had been inoculated with success, and had lost in consequence a larger or smaller portion of the tail take sick with lung plague three to five months after the inoculation.—(*Mittheil. aus de. thierärztl. Praxis, &c., neue Folge,* 4. *Jahrg.*, 1879, *S.* 7.)

I have repeatedly observed that lung plague broke out in herds among which several months, even a year before, preventive inoculation had been resorted to. In all

these cases the plague attacked on an average the same percentage of the herd as in those which came to my notice and in which inoculation had not been practiced. This, however, was only determined after the *post mortem* of several slaughtered herds that had been inoculated preventively, and among which proportionately few visible cases of the disease had appeared. Of these observations I will give but one case which occurred some time ago, and one which recently came to my notice on account of their general interest:

(1) Upon an estate there stood in one stable 46 working oxen, in another 2 bulls and 81 cows, and in a third 2 bulls 6 months old, 45 head of heifers from 1½ to 2½ years old, some of which were pregnant. In the ox and the cow stables which were separated from one another only by the feed house, lung plague appeared simultaneously, of which within a few days 3 oxen and 2 cows became diseased very seriously. When on April 21 I examined the 5 diseased and already isolated animals, as well as the entire herd for the first time, I found several additional cows, a part of which had passed through the plague and others were partly affected with the disease in its beginning. Under these circumstances, on my advice, the inoculation of the oxen and cows was not resorted to; on the other hand I inoculated with excellent lymph, from a diseased lung of a young cow moderately diseased and just slaughtered on the following day, April 22, the entire young herd in the third stable, all apparently healthy, which at the time were upon the sheepfold belonging to the infected farm and about 30 meters distant. Although in most of the animals a local reaction appeared, and in a few the tip of the tail had even become necrosed, the result of inoculation did not correspond to the ideas of the inspector of the estate upon whose wish I repeated the inoculation of all 47 animals on May 24, with equally good lymph obtained from an older cow slaughtered the day before. Hereupon there appeared with many animals a plainly perceptible swelling, but an extensive swelling of the tail such as the estate inspector wished was not noticed in a single case. In spite of this 13 heifers had lost the end of the tail in the two inoculations.

Of the oxen and cows 14 additional head (including 6 oxen and 8 cows), took sick up to June 24, so that the plague broke out in 19 head (9 oxen and 10 cows). Of these there died 3 oxen and 5 cows, while 4 cows were slaughtered, and the remaining 7 animals recovered. Later 2 more oxen, 3 cows, and 1 bull bought February 8, which probably had introduced the plague, were sold for slaughter on account of the bad condition of nutrition. Moreover, in 1 ox and 2 cows and the other bull in which lung plague symptoms were not at all observed, and which perished in late summer and fall from anthrax, lung plague lesions in process of retrogression were found.

After lung plague had been forgotten I found in the *post mortem* of 2 pregnant heifers which had fallen in the night of the 25th to 26th August from anthrax, fresh hepatized places in the lungs. I now undertook a thorough examination of all the inoculated beeves, but could not determine any symptoms pointing to lung plague, setting aside a cough which some heifers at times emitted. But scarcely four weeks later and five months after the first inoculation, on the 23d of September, I diagnosed lung plague in a pregnant heifer which had been treated for some days for supposed constipation. On October 8 another pregnant heifer took sick; in the following eight days there appeared almost daily and later only isolated new cases of the disease, so that up to November 20, when the last animal (a bull) became sick, 14 animals had been plainly affected with the plague, of which 5 died, and all the remaining ones, which had been ill but slightly, recovered. Moreover, the *post mortem* of 2 heifers which had perished from anthrax in the fall revealed lung plague of a later stage. I inferred from the frequent cough that many of the heifers had been seized by the plague and had unnoticeably gone through the disease. It is noteworthy that calves of full time were born by two sick heifers; these calves died soon after birth, and their lungs appeared in great part newly hepatized.

(2) Two almost equally large herds placed in two stables separated by a broad street were inoculated preventively on the 11th of May, 24th of November, 1881, and the 3d of February, 1882, because lung plague had appeared at the beginning of May among the cattle of another estate belonging to the same person. In spite of this, lung plague appeared in the same, which was diagnosed on February 14, by slaughtering an ox at the request of the owner. This herd included 85 working oxen, 3 bulls, 76 cows, 4 heifers, in all 168 head. Up to April 29, 11 head (6 oxen and 5 cows) were plainly diseased and had to be slaughtered by order of the Government. Moreover, among several oxen and cows slaughtered for other reasons, changes brought about by lung plague, in part of recent in part of advanced state, were found, and many other animals, especially cows, were suspected during the observations on account of the frequent cough, so that the plague appeared to have a much further extension than the comparatively small number of the plain cases would warrant. Of the 12 animals plainly diseased 8 (4 oxen and 4 cows) had been three times inoculated, and 4 (3 oxen and 1 cow) had been twice inoculated. In the same manner inoculation had been practiced in part twice and in part three times upon the remaining beeves which had been found affected with lung plague on slaughter. The introduction of the

plague had most probably taken place at the end of September, 1881, by some newly introduced cows.

It is not necessary to our purpose to make a more extended list of such cases since the above are sufficient to demonstrate that even two or three inoculations cannot be depended upon to protect against the effects of exposure to the contagion of pleuro-pneumonia. The facts mentioned are not isolated nor rare, but they are continually occurring in the experience of all who practice this operation largely, and who keep a supervision over the animals operated upon.

Pleuro-pneumonia introduced into previously uninfected herds by inoculation.—The fact can scarcely be contested any longer that the local swelling and inflammation which follows inoculation is the result of the activity and multiplication of the virus at the point where it has been inserted. This has been admitted and emphasized by the advocates of inoculation, and has only been denied by those opposed to the operation. Willems and others have successfully inoculated other animals with lymph obtained from the tails of previously inoculated ones. Voightlaender, Reynal, the recent commission of French military veterinarians, and many others, have insisted that the pathological anatomy of the inoculation tumors and of the affected lung are essentially identical, and that the inflammation of the tail which follows inoculation is of the same specific nature as the inflammation of the lungs in the spontaneous disease. Now, accepting these as facts, it follows that the lymph which forms in the inoculated tail contains the virus of the disease exactly as does the lymph of the inflamed lung, and that this lymph exuding as it does from the inoculation wound, from the surface of the swelling, and from ulcers which form there, dripping upon the stable floor, scattered over the hair of the inoculated and neighboring animals, and on the clothing of attendants, is an infective lymph, and is capable of giving rise to outbreaks of pleuro-pneumonia. Some have vigorously denied that inoculated animals could infect others with lung plague, claiming that this can only occur through the expired air of animals affected with the lung lesions. That the expired air is virulent only because it has in the lung come into contact with the infectious liquids formed there, is very evident, and there appears to be no reasonable grounds for concluding that a liquid which yields a contagion to the air when it comes in contact with it in the lungs would not also yield it to the air outside of the lungs, especially where the lymph becomes dried and pulverized, and in that condition floats in the air as do particles of other dust. There are many cases on record where lung plague has been carried from herd to herd by persons passing between them. A case of this kind evidently occurred during the outbreak of 1884 in Illinois. That animals contract the disease from infected stables is also too firmly established by frequent observation to be set aside by the few negative experiments that have been made, and from which some have hastily concluded that the malady could only be contracted directly and immediately from affected animals. As inoculation has been chiefly practiced in stables where lung plague already existed, there have not been so many opportunities for the introduction of the plague into fresh herds by this operation as would at first sight appear to have been inevitable, still the so-called "preventive" inoculation has been adopted more or less, and cases have been observed from the earliest practice of inoculation to the present where the lung plague broke out among inoculated animals that had not been exposed to the disease in any other way.

In his report made to the Prussian Government of investigations made in 1852, Dr. C. Ulrich said:

No instance has come to our knowledge wherein inoculated animals placed in purified stables have become infected. Nevertheless, a member of the agricultural association of Dusseldorf, has assured the members at a recent sitting, that inoculations made at Rheinberg had been attended with the results of propagating peri-pneumonia, which before was in that situation unknown.* Dr. Fleming writes:

With regard to the identity of the inoculated with the natural disease, Reynal mentions an instance in which a Breton heifer inoculated by him communicated the malady to 2 others standing beside it, in a stable of the Alfort school. The characteristic changes were found in the lungs of both after death. That this inoculated malady is contagious, has likewise been proved by the observations of Voightlaender and Lenhardt in Germany.†

Dr. A. Zundel expresses the same opinion. He says:

The inoculated animals are a danger for healthy animals with which they come in contact. It is certain that after inoculation a virus is produced which may be propagated at a certain distance and infect—peremptory cases have been reported by Voightlaender, Lenhardt, Reynal, Roloff, and Albrecht * * * In all cases preservative inoculation is to be discouraged in healthy stables, where pleuro-pneumonia does not yet exist, and as a rule in a country where the disease has just been imported and can be easily extirpated in its primitive centers. In this case one would be exposed by the operation to a useless mortality; the way would be opened for a dangerous virus to be spread in the country by the operation; it would be above all to risk acclimating the disease as, according to Roloff, happened in Saxony. It is the duty of the sanitary police to absolutely prohibit these preservative inoculations; and in cases where they are judged useful the animals should have the same supervision and the same isolation as a stable directly infected.‡

Dr. H. Pütz contributes the following case:

In an inoculated cow several weeks after the operation in May, a considerable swelling of the tail and of the croup arose, in consequence of which the skin was cracked deeply at different places of the swelling. From these there flowed very abundantly a yellow lymph during the months of July and August, 1881. Later "triel" inoculations produced not the slightest reaction in this cow.

On the 28th of October of this year a Holland cow, born without a tail, which had stood near the above cow in the same stable, was announced as sick, and on October 29 was slaughtered on account of lung plague. At the *post mortem* it was found that this animal was affected in a severe degree with the appearances of so-called natural lung plague.

The question now arises, In what way was this tailless Holland cow infected? * * * * Under these circumstances we must think involuntarily of the possibility that the inoculation disease of the first cow was the starting point of the lung disease in the Holland cow.§

In his annual report for 1881 Dr. Roll says: "The plague was imported into one locality by undertaking protective inoculation in the farm which belonged to the community."‖ M. Verrier recently gave a detailed account to the *Société Centrale de Médecine Vétérinaire*, of an outbreak of lung plague, which he believes resulted from inoculating the herd.¶

The following case, reported to the same society by M. Cagny, is given in full because of the clearness of the history:

The veterinarian of M. B. having discovered with one of this gentleman's cows symptoms analogous to those of pleuro-pneumonia declared inoculation to be necessary. M. B.'s farm is isolated; no animals had been introduced for ten months. Ten years before the same disease had been recognized and inoculation practiced by my

* Veterinarian, 1853, p. 516.
† Manual of Vet. San. Science and Police, vol. I, p. 433.
‡ *A. Zundel Dict. de Méd. de Chir., &c., par. Hurtel d'Arboval*, III, 97, 98.
§ *Seuchen und Herdkrankheiten Unsere Hausthiere*, p. 696.
‖ *Veternär-Bericht*, 1881, p. 74.
¶ *Rec. de Méd. Vet.*, June 30, 1884, p. 261.

father according to orders of the authorities, and with good results. Considering these facts, M. B. did not hesitate to have his animals inoculated. The "declaration" was not transmitted to the authorities, and the inoculation was practiced by M. B.'s veterinarian. More than that, the sick cow was not killed. At the end of three weeks this cow, wrongly suspicioned, as it appears, died, and at the autopsy the veterinarian recognized that it was not a case of pleuro-pneumonia, but a pulmonary abscess caused by an injury.

Here, then, was a preventive inoculation practiced on 60 animals. At the end of six weeks phenomena of success appeared very evident at the points of inoculation, and it was necessary to slaughter 5 cows successively because the consecutive inflamatory action had invaded the body and assumed enormous proportions.

Five months after the inoculation I was sent by the authorities, and I recognized all the lesions of pleuro-pneumonia in the lungs of a sick cow killed the day before my arrival. I had another cow isolated which appeared a little sick, but as I have received no information since my visit I conclude it was not a new case of pleuro-pneumonia. There remained still 6 work oxen, 33 milch cows, 2 bulls, and 10 heifers, oxen or fattening cows. About a third of these animals had lost all or part of their tails. The loss of the tails and the animals previously slaughtered proved that the liquid inoculated was pleuro-pneumonia virus of good quality.*

This case reminds us very forcibly of the similar one recorded by Dr. E. M. Hunt, who, as secretary of the State board of health, directs the work for the suppression of pleuro-pneumonia in New Jersey. It is as follows:

A farmer and dairyman having about 30 head of animals in his herd, and not having and never having had any cases of contagious pleuro-pneumonia among his cattle, was informed that two or three of his neighbors had the disease among their herds. He was a mile and a half from the nearest one. The cattle had not come near to each other by neighboring fields. He had no occasion to take any of his cattle to other yards, or to have any brought to his. He had not purchased an animal for three years. Not knowing the law of the State, he concluded to have his cattle inoculated by a veterinarian of Newark. His entire herd was inoculated in the month of December. One or two of these animals lost their tails, several were somewhat sick and recovered, and did not contract pleuro-pneumonia, though afterwards exposed. On the 10th day after the inoculation 2 calves had convulsions and died. Three of the healthiest cows were taken severely sick with all the symptoms of contagious pleuro-pneumonia, and had to be slaughtered. *Post mortem* examination left no doubt as to its being genuine contagious pleuro-pneumonia. Some of the other cows did not recover their usual health or milk supply. A thorough examination four weeks later by H. W. Rowland, D. V. S., of Jersey City, and J. Gerth, jr., D. V. S., of Newark, showed conditions of lung that would indicate nothing else than contagious pleuro-pneumonia. As the cows were gaining the owner was permitted to keep them on condition that they should not be sold until fit for slaughter, and then not for any other purpose.†

THE PRACTICAL RESULTS OF INOCULATION.

In what has been written above on the subject of inoculatiom an attempt has been made to establish certain facts which bear in a general way upon this operation and its effects, and which are necessary to an understanding of the results which have followed its introduction in various countries. As authentic information as it has been possible to obtain, up to the time of writing this report, will now be given in regard to the principal countries where inoculation has been practiced.

HOLLAND.

Dr. Wehenkel, in considering the results obtained in stamping out pleuro-pneumonia in Holland, says:‡

Since we are brought again to consider what has happened in Holland, we stop to inquire if it is indeed to inoculation, as certain partisans of this operation seem to think, that must be attributed the favorable results obtained by the Dutch Government in the struggle against pleuro-pneumonia. We find in Holland, besides inocu-

* *Rec. de Méd. Vét.*, Nov. 30, 1884, p. 421.

† First Annual Report of the Bureau of Animal Industry, 1884, p. 439.

‡ *Royaume de Belgique. État Sanitaire des animaux domestiques d'aprés les rapports officiels des médecins vétérinaires du governement. Bruxelles,* 1881, pp. 43–41.

lation, other measures, the application of which appears to us to have played a role much more considerable than the said inoculation in this struggle against pleuro-pneumonia. The slaughter of sick animals and even of the suspected ones has certainly not been without influence on the success obtained. But it is said the frequency of pleuro-pneumonia has become less, and this affection has almost completely disappeared, not only there where the radical measure of slaughter is enforced, but also there where they have had recourse to inoculation. That is to our eyes a fact which is only normal. In all Holland, the *spoeling* districts excepted, pleuro-pneumonia has been combated energetically by measures which have our complete confidence, that is, by the slaughter of the sick and even of the suspected, followed by other good measures of sanitary police. Is there, then, reason to be surprised that in the *spoeling* districts, which recruit their animals from the remainder of Holland, this disease also diminishes in frequency? We think not. Besides, it is not in Holland alone that we have occasion to observe this happy influence of a good application of the measures of sanitary police against pleuro-pneumonia. Other countries have had recourse to these and with just as much success; among others, Alsace-Lorraine and the Grand Duchy of Baden may be included in this number.

During a discussion on this subject by the *Société Centrale de Médecine Vétérinaire* M. Leblanc presented the following facts, which were summarized from the report of M. Lavalard for 1881:*

Holland has been divided into two parts, one where the law ordering the slaughter of diseased or suspected animals is executed, the other called the *spoeling* district or district of distilleries, comprising seven departments: Rotterdam, Overschie, Kethel, Delftshaven, Schiedam, Schiebroek, and Hillegersberg. In this district inoculation alone has been the remedy applied, and no suspected animal has been slaughtered by Government authority.

You see, gentlemen, that the former part comprises almost the whole of Holland; it is there that sanitary regulations have been applied. Here are the results obtained:

Years.	Animals affected.	Departments.	Years.	Animals affected.	Departments.
1871	6,078	157	1877	956	78
1872	4,008	261	1878	701	72
1873	3,500	199	1879	157	27
1874	2,414	136	1880	44	17
1875	2,227	106	1881	12	6
1876	1,723	110			

When inoculation has been credited with the almost complete disappearance of contagious pleuro-pneumonia in Holland, no account has been taken of the excellent organization of the sanitary service which is confided not to all veterinarians, but to veterinarians for epizootic diseases appointed by the Government, nor has account been taken of the slaughter of contaminated animals. However, it is to the organization of the veterinary sanitary service and to slaughter without mercy that the great amelioration of the sanitary condition of Holland is due. It is necessary to add that there is almost no importation into this country, a condition very different from that which exists in France. It is probable that the same measures applied in our country (France) would not give as favorable results, at least until the neighboring countries stopped sending to us their contaminated beasts; as to sick animals, inspection at the frontier should prevent their entrance.

Let us see now the results obtained by inoculation alone in the *spoeliny* district during the year 1881, after obligatory and preventive inoculation had been practiced for ten years:

Departments.	Animals inoculated.	Losses from inoculation.
Rotterdam	175	.....
Overschie	8,781	96
Kethel	3,609	45
Delftshaven	3,984	31
Schiedam	6,752	82
Schiebroek	1,028	17
Hillegersberg	265	1
Total	24,594	272

* *Rec. de Méd. Vet.*, Apr. 30, 1883, p. 145.

Besides there were found among the animals slaughtered in the abattoirs of Schiedam, Overschie-Schiebroek, Kethel, and Delftshaven 267 animals affected with pleuro-pneumonia. Of course, they could not count those which were exported from the district, and which may have been found in the same condition—still these ought to be taken into account. Here is the table for the abattoirs above mentioned:

Schiedam	166
Overschie-Schiebroek	95
Kethel	55
Delftshaven	11
Total	267

In 1880 they only found in these same abattoirs 177 animals affected with pleuro-pneumonia, or 90 less than in 1881, which indicates a going backwards instead of progress as in the remainder of Holland.

Consequently, for 24,594 animals inoculated there occurred 272 deaths from the operation, and 267 cases of disease found at abattoirs, in all 539, or 2¼ per cent.

If these figures were exact they would already be unfavorably compared with those obtained in the remainder of Holland; but they cannot be exact. In the *spoeling* district they fatten animals, and only a small part of these are consumed in this district, the immense majority of them being exported. There is no information in regard to the latter, and it is not known how many of them have the disease in a chronic form or have had mild attacks followed by recovery.

To this very clear statement the following remarks by Prof. G. T. Brown, of the Royal Veterinary College, are added to show that substantially the same views are held by him:*

Pleuro-pneumonia cannot be extirpated by the adoption of inoculation. The experiences of the Netherlands prove that other and stronger measures are required. In the year 1871 slaughter of diseased animals was commenced in the Netherlands, and during the year there were over 6,000 cattle attacked with pleuro-pneumonia. By a decree of the 30th of October, 1872, owners of cattle were compelled to slaughter not only diseased animals, but also those which had been herded with them, within eight days from the appearance of the disease, unless the animals had been inoculated immediately.

These regulations had the effect of reducing the number of attacks from 6,000 in 1871 to 4,000 in 1872. Further provisions for arresting the spreading of pleuro-pneumonia in the Netherlands were enforced in the following year. By a decree of October, 1873, it was forbidden to move cattle out of infected districts, except under severe restrictions. All the cattle in those districts were registered, and any change which took place in respect to the number of animals specified in the lists had to be immediately reported to the inspector, and if any animal died or was slaughtered, notice of the fact had to be given to the inspector within twelve hours after the occurrence, in order that an examination might be made before any part of the animal was removed. Under this system the number of attacks was reduced to 2,479 in the year, and it may be noted that this number was not further diminished during 1874 and 1875, notwithstanding that in 1874 inoculation of all suspected animals was made compulsory. In 1876 the slaughter of the whole herd, as soon as pleuro-pneumonia made its appearance, was ordered by royal decree, and from that time the decrease in the number of attacks was extremely marked. During the first year of this system the cases were reduced from 2,227 in 1875, to 1,723 in 1876. In the following year, 1877, the number of attacks fell to 951. In 1878 it was 698, in 1879 there was a further decrease to 157, and in 1880 the total cases of pleuro-pneumonia in the whole Kingdom of the Netherlands only reached the number of 48.

Since 1880 very few animals have been attacked by pleuro-pneumonia, but in the *spoeling* district some very curious results were obtained from the examination of the carcasses of cattle which were sent for slaughter in the ordinary course of trade, not being suspected at the time to be suffering from pleuro-pneumonia or any other disease. In consequence of the prevalence of pleuro-pneumonia in the *spoeling* district, no cattle have been permitted to leave that district alive for a long time past, and whenever cattle are slaughtered within the district, they are examined after death by the veterinary inspectors. The result of these inspections was the discovery in numerous instances of the existence of pleuro-pneumonia in the lungs of cattle, which during life had given no evidence of the disease.

These facts indicate that the most stringent measures are not immediately effectual in extirpating the disease.

* Veterinarian, 1886, p. 10.

According to the report for 1884 the number of cases of pleuro-pneumonia during the year was as follows:

South Holland	167
Limburg	14
Zeeland	52
North Brabant	1
Total	234

There were slaughtered during the year, of suspected cattle, the following numbers:

South Holland	2,932
Limburg	82
Zeeland	29
North Brabant	7
Total	3,050

Of the suspected cattle slaughtered there were found diseased:

In South Holland	168
In Limburg	21
In Zeeland	12
In North Brabant	1
Total	202

The table of inoculations is given as follows:

District.	Number inoculated.	Number deaths from effects of inoculation.
Schiedam	1,648	16
Overschie	1,450	15
Delftshaven	977	14
Kethel	687	14
Rotterdam	7	.....
Total	4,769	59

A table is also given which shows the total number of animals affected with pleuro-pneumonia for each year from 1875 to 1884. This table, which includes both the animals recognized to be sick during life and also those in which lesions of the disease were found in the lungs at the abattoirs, is as follows:*

Year.	Number affected.	Year.	Number affected.
1875	2,227	1881	99
1876	1,733	1882	164
1877	970	1883	117
1878	1,448	1884	436
1879	270		
1880	138	Total	7,612

These tables from the report of 1884 give quite a different idea of the results of the measures adopted in Holland for the suppression of pleuro-pneumonia from that which has been current for several years. It will be seen that the number of cases of disease reached its minimum in 1881

* *Verslaga an den Köning van de Bevindingen en Handelingen van het Veeartsenijkundig Staatstoezicht in het Jaar* 1884.

when it fell to 99, but that it rapidly increased after that year until in 1884 it reached the very considerable number of 436, of which 335, or nearly 77 per cent., occurred in South Holland, where inoculation is practiced. It is evident, therefore, that inoculation has not yet extirpated this disease from Holland, nor is this measure sufficient to do this even when assisted by the slaughter of all the apparently diseased animals. On the contrary, with the most rigid supervision of all the cattle in the *spoeling* district, and the immediate slaughter of the sick and the inoculation of all those exposed, there were more cases of disease in 1884 than in any year since 1878. This would indicate that pleuro-pneumonia has been restricted in its ravages as much as is possible while inoculation is practiced, and that the plague will not be exterminated until this practice is prohibited and all infected herds are slaughtered.

BELGIUM.

As the practice of inoculation originated in Belgium and has been largely followed there, it is interesting to inquire into the opinions in regard to it and into its practical results. There is a general opinion even among veterinarians that the experiments and reports of the Belgian commission were all favorable to inoculation. On this point Dr. Oemler writes:*

> The commission appointed by the Belgian ministry expressed itself against the value of inoculation in the first five reports; the sixth report contained a majority and a minority report, the latter being in favor of inoculation; the seventh and last report, of November 18, 1864, pronounced itself unanimously in favor of inoculation. Professor Verheyen (one of the ablest members of the commission), a decided opponent of inoculation, had died in the mean time and took no part in the preparation of this report.—(*Oesterr. Vierteljahrschr. f. wissensch. Veterinärk., 26, B., 2. H.*, 1866, *S.* 157.)

In the Belgian official report for 1878 we are told that according to M. Vaes, veterinarian at Hasselt, some of the distillers do not practice inoculation until there is an outbreak of pleuro-pneumonia in their stables. As soon as the disease appears they inoculate every animal. Under such circumstances, he remarks, inoculation very often fails to produce the desired results, and this failure is the criterion for the abandonment of the practice until the disease, after having disappeared for some time, invades the herd anew. On the other hand, he says, many distillers at Hasselt always keep their animals inoculated, and at these stables cases of pleuro-pneumonia are continually found. When inoculation is constantly practiced under favorable conditions, cases of pleuro-pneumonia still appear, but they are more rare and of shorter duration (p. 55). M. Gailly and many others have observed pleuro-pneumonia even in stables containing many animals when it only attacked a very small number, although inoculation was not practiced (p. 56). M. Cambron, veterinarian at Villance, found pleuro-pneumonia in a stable of 30 head, of which only a single one was killed. The others had a cough, but did not present definite symptoms from which pleuro-pneumonia could be diagnosed (p. 57). M. Patte, veterinarian at Convin, found pleuro-pneumonia in five stables, in two of which inoculation was practiced. One of these stables contained 99 animals. The disease continued in spite of the inoculation (p. 57). M. Villeyn, veterinarian at Ecloo, having recognized the existence of pleuro-pneumonia in the stable of a farmer at Maldeghem the 27th of June, inoculated the remainder of the animals. He had almost concluded that it was successful, when, July 20, he found one of the inoculated cows with the symptoms of pleuro-

* *Loc. cit.*, p. 122.

pneumonia. He soon recognized the disease with 5 other animals in the herd. He did not know to what to attribute the unfavorable result; the lymph was gathered and the inoculation made under good conditions (p. 57).

In the report for 1881, Dr. Wehenkel, the chief veterinarian, says:

With Leblanc, Zundel, Lydtin, Roloff, Müller of Berlin, and many others, we think that it is in a proper application of sanitary measures, in the slaughter of sick animals and a rigorous quarantine, if not the sacrifice of the suspected animals, that we ought even at present to seek the true means of freeing ourselves from this disease. The good results obtained in other countries assure us of the efficacy of such measures. The means that we recommend would cost, perhaps, for the moment, somewhat dear, but all well considered, we are convinced the system now in use is still more costly (p. 44).

He further says:

We cannot refrain from bringing out the singular fact that this year again the localities which have furnished the most victims to pleuro-pneumonia are found among those where the veterinarians or the principal owners of bovine animals are partisans of inoculation. Among these we would especially mention the localities of Hasselt, Anvers, and Hal. In the two departments of Hasselt (which includes Curange), the greater part of the distillers are, we are told, partisans of Willems' inoculation, and, however, abstraction made for the hundred and some animals affected with contagious pleuro-pneumonia and sent to the abattoirs of the other cities, these two localities have furnished more than 300 of the 355 animals affected with this disease in Limburg. In the province of Anvers, Déle has been obliged to kill, during 1881, 56 of the 129 animals recognized as affected with this disease in the department confided to his care. In Brabant, finally, the department of Hal has furnished 66 of the 420 animals found with the disease (p. 47). We are not alone, then, when it comes to pronouncing upon the efficacy of this operation. * * * We have been brought to write these few lines by reading a passage of the résumé of the veterinary reports of the province of Namur on the sanitary condition during the first trimester, in which it is said, "that it is to be desired that the Government take severe measures of sanitary police in order to diminish the number of victims that this redoubtable disease does not cease to make everywhere where it prevails; it might in imitation of the French Republic give to the inoculation of Willems a legal status."

If we share perfectly the opinion of the honorable colleague of the provincial commission of Namur as to the urgency of the application of severe measures of sanitary police against contagious pleuro-pneumonia, we regret not to desire with him that our Government follow here the example of France, above all if we admit that this has resulted as says the learned inspector of the veterinary schools of this latter country. We are convinced that in this important question our Government will not make a decision until there is a well-fixed opinion on the real value of the measures to be recommended, and we are no less convinced that in such a cause it will be forced into action by no one. We have not a particle of doubt that the only power which in the struggle against the disastrous disease under consideration can bring our Government to substitute some other system for the wise measures of a rigorous sanitary police is the brilliant light of facts, and not an uncertain or a contested light.

This is certainly not the moment to decree obligatory inoculation or even to recommend its administrative employment. It is very true that the practice of M. Willems has at this time numerous partisans, and among them very learned and competent men; but it is none the less true that other practitioners, who have also their value and merit, do not share this opinion, and express their doubts in regard to the efficacy and the opportunity for the employment of this measure considered as a preventive for pleuro-pneumonia. More than this, certain veterinarians, and among them the most distinguished, such as Lydtin, the chief of the veterinary service of the Grand Duchy of Baden, Zundel, superior veterinarian of Alsace-Lorraine, and others, are even of the opinion or are disposed to believe that inoculation is a means of keeping up and propagating the disease under consideration.

It seems strange to see a practitioner, whose knowledge we esteem, recommend obligatory inoculation to the Government when only three paragraphs farther on he says to us that he is inclined to believe that the animals *which have undergone the inoculation of Willems with success, as well as those which have had the disease in a mild form by virulent impregnation, are still apt to transmit, during a certain time, the disease to healthy animals, and that he considers it imprudent to buy animals from stables where the disease appears to have disappeared within a year or more without the animals having been replaced with fresh ones.* If this is the case, would it not be better from an economical and sanitary standpoint, to get rid of the infected or suspected animals by sending them to the butcher than to communicate to them the power of transmitting the dis-

case by inoculating them, and to thus make it impossible to dispose of them within a year or more without danger?

To raise the question is, it seems to us, to settle it

Moreover, Halot, in his résumé relative to the sanitary condition of the animals in the province of Namur during the 4th trimester, has furnished an argument which tends to prove the deceptions which the license of obligatory inoculation may have in store for us. This is, in effect, what we read in this résumé, "at Willerzie (Gedinne), which is the best proved locality in this commune, the disease has continued more than a year and a half in spite of the best hygienic conditions and of inoculation which appears at present to give such favorable results. (Pp. 45–46.)

In the report for 1882, we are again told that—

As to information bearing on inoculation it is neither more nor less demonstrative and concordant than that of preceding years; we find nothing sufficiently interesting to attract special attention. We mention, however, a fact which appears to merit attention by the figure of losses that the disease has occasioned in this case; it occurred at the industrial agricultural establishment of Bernissem where, from January 12 to March 3, 42 animals had to be slaughtered. The cause of the appearance of the disease in this establishment has remained unknown. All the bovine animals which were found there were inoculated, but this operation did not give a very conclusive result, says Eraers, who makes the report, for 34 animals were still slaughtered after having been inoculated. The disease was extinguished after six weeks, but why? The partisans of inoculation say that it was because of the operation; those who are not partisans of this operation contend, and perhaps with as much reason, that this result is due to the hygienic and sanitary measures to which they had recourse from the beginning of the disease (slaughter, disinfection, whitewashing, cleaning, &c.). What militates in favor of the latter view is the complete disappearance of the disease from the stables of Bernissem while at Hasselt, where the measures of sequestration, &c., are not strictly applied the affection always exists. * * * We believe we have found another proof of this fact in what we have observed in one of the centers of contagious pleuro-pneumonia in Brabant (a farm at Rhode-Saint-Genèse); in spite of the inoculations and reinoculations to which they had recourse during a number of years, this disease continued to maintain itself there, and it was only when they decided upon a rigorous execution of the prescribed measures that the disease almost completely disappeared in a short time.*

The result of the struggle with pleuro-pneumonia in Belgium is seen by the following table, which gives the number of cases annually for sixteen years:

Years.	Cases.	Years.	Cases.	Years.	Cases.	Years.	Cases.
1867	1,481	1871	1,571	1875	2,739	1879	2,030
1868	1,384	1872	1,541	1876	2,474	1880	1,718
1869	1,502	1873	2,271	1877	2,659	1881	1,676
1870	2,146	1874	2,046	1878	2,800	1882	1,781

This table demonstrates that for sixteen years there has been no progress towards extirpating this disease; that in 1878 there were twice as many cases as in 1868, and that for the last five years of the series the losses were more severe than for the first five years. On this subject Oemler remarks:†

Of the cases of disease most appeared in the province of Limburg in proportion to the number of animals, and of these cases the greater part were in the city of Hasselt where Willems made his first inoculation experiments in 1850, and where up to this time most of the newly introduced cattle are immediately subjected to protective inoculation. Thus, in the year 1876 there were 455 cases in the province of Limburg and 429 for the city of Hasselt alone, while of the 682 cases which appeared in the province of Limburg in 1878, 600 occurred in Hasselt, where, in the twenty distilleries, about 3,500 head of cattle are kept for fattening, which are changed two to three times annually. (*Archiv f. wissensch. u. prakt. Thierh., VII,* 414.)

---

* *Royaume de Belgique. État sanitaire des animaux domestiques d'aprés les rapports officiels des médecins vétérinaires du gouvernement. Par le Dr. J. M. Wehenkel, Bruxelles.* (Annual.)

† *Archiv f. wissensch. u. prakt. Thierh., X,* p. 120.

The friends of inoculation might maintain in opposition that the frequent occurrence of lung plague in these regions where inoculation is practiced is not to be credited to inoculation, but solely to the circumstance that just there a very active interchange of cattle takes place, and therefore the conditions exist for the continual introduction of the plague. Although this cannot be denied, we may justly reply that in consequence of the great confidence in inoculation the most necessary means of precaution are not sufficiently regarded, and in consequence of this, lung plague has spread and become fixed to a greater and greater extent. Moreover, if we remember that in other places where lung plague inoculation is either not at all used or only slightly, an equally active interchange of cattle existed, and yet lung plague does not prevail to a striking degree. These observations must have the effect to awaken a suspicion against the efficacy of inoculation.

KINGDOM OF SAXONY.

In 1882, according to the table of inoculations handed in by Veterinarian Luhig, this operation was practiced in a herd of 67, of which 3 were already diseased. Fifty-two remained well and 11 became sick, the latter being all slaughtered. Of the 64 inoculated, 41 showed a plain reaction, 3 lost the larger part of the tail, and 16 lost less than half of this organ. One was slaughtered on account of gangrene resulting from inoculation. As a cause of the unfavorable course of the disease and the many losses of the tail, the veterinarian mentions the feeding of swill (*schlempe*) and the poorly ventilated stable. Veterinarian Prietsch says in the report for the second half of the year that very little use has been made of inoculation, and it appears as if the imperial law concerning animal plagues was the reason for this. The people receive a remuneration of four-fifths value when their cattle sicken of lung plague, but they receive nothing when an animal perishes from inoculation. The owners of the smaller estates can scarcely be persuaded to resort to inoculation.*

In 1883 the following table showing the results of inoculation was given:

Name of observer.	Number exposed to infection before inoculation.		Of these—					In consequence of inoculation.		
	Not yet sick.	Already sick.	Remaining healthy.	Sick.	Recovered.	Dead.	Slaughtered.	Died.	Lost a larger part of the tail.	Lost a smaller part of the tail.
König	301	12	277	24	.....	.....	24	.....	6	1
Proger	71	10	53	18	.....	2	16	1	1	12
Phillippi	38	12	31	5	3	2	12	.....	.....	.....
Dinter	50	.....	48	2	7	1	1	.....	.....	.....
Hubner	11	.....	7	3	.....	.....	3	1	.....	1
Total	471	34	416	52	10	5	56	2	7	14

It would appear from this table that of 505 animals exposed to the disease, 34 sickened before inoculation, 52 after inoculation, and 2 died from the results of the operation, making a total loss of 88, or 17.4 per cent., with one animal unaccounted for.

Veterinarian Prietsch, in commenting on the fact that the manner of the introduction of lung plague could not always be determined, says:

The continual purchase of animals gives an opportunity for the introduction of the disease, but it may also be possible that the plague has been introduced by protective inoculation. I will, indeed, grant that inoculation itself, *i. e.*, the introduction of

* *Bericht über das Veterinärwesen im Königreich Sachsen für das Jahr* 1882, pp. 65–66.

lymph under the skin—has also been a cause of an outbreak. Is it not also conceivable that the physician may transmit the contagion by his clothing in which he makes the *post mortem* and has prepared the lymph? Could it not be possible that by spilling lymph fluid in the stable during inoculation an infection could have taken place? *

PRUSSIA.

The principal center of pleuro-pneumonia in Prussia exists in the province of Saxony, and in this country we find, as we did in Holland and Belgium, that in those localities where inoculation has been practiced longest and most determinedly, there the disease has become most firmly established and is most difficult to control. In reviewing the Imperial German Report Dr. Zündel† said, that the methods of handling cattle in Saxony require many purchases and frequent changes in the herds. Besides, the section of the law concerning the declaration of epizootics was not yet (1882) executed as the law demands. Inoculation of bovine animals, which was very much practiced in that province, had not so far produced useful results. The Prussian law in regard to epizootics dates from June 25, 1875, and was replaced April 1, 1881, by the law of the Empire known as the law of June 23, 1880. The chief difference consists in the authorization to slaughter and compensate for suspected animals under the latter law, while in the former this was confined to sick ones.

To show how pleuro-pneumonia was kept up in Saxony while decreasing in other parts of the Empire, Zundel gives the following statistics:

Year.	Cases in whole Empire.	Cases in Saxony, Brandenburg, and Posen.
1878–'79	2,079	1,233
1879–'80	2,364	1,655
1880–'81	1,749	1,157

The loss outside of Brandenburg, Posen, and Saxony was consequently for these years respectively, 846, 709, and 592 head, showing a regular and rapid decrease. Considering now that in Brandenburg and Posen the loss fell in 1880–'81 from 226 to 138 head, while during the same year the two departments of Magdeburg and Merseburg, in Saxony, counted 793 dead or destroyed, and that in these two departments of Saxony, according to official figures, the number of cases of pleuro-pneumonia was, in 1878–'79, 25 per cent.; in 1879–'80, 44.7 per cent., and in 1880–'81, 48 per cent. of all the cases of this disease in the whole monarchy, the conclusion is reached that it is only the province of Saxony, and particularly the departments of Magdeburg and Merseburg, which obtained no result from the law of 1875.

The reports which have been issued since Zündel's review was written show that the conclusion then reached still applies, and that Saxony is more decidedly than ever before the plague-spot of Prussia so far as regards this disease.

* *Bericht über das Veterinärwesen im Königreich Sachsen für das Jahr* 1883, p. 65.
† *Rec. de Méd. Vét.*, 1882, p. 1037.

The following table, made up from recent reports, gives the figures:*

Year.	Cases in Saxony.	Proportion to loss in whole of Prussia.
		Per cent.
1881-'82	1,143	57
1882-'83	1,189	57
1883-'84	1,633	53

It appears from these statistics that inoculation is not making the least progress towards extirpating pleuro-pneumonia from Saxony.

The Prussian reports from year to year contain particulars in regard to the effects obtained by inoculation, which are of much interest to the student of this question. There were inoculated in Naulin, on February 14, 113 head of cattle, and in Megow, on February 13, 147 head. In both herds the usual inoculation reaction appeared. Nevertheless, up to April 22, there afterwards took sick in Naulin 66 and in Megow 41 head so severely that they had to be slaughtered by order of the authorities. Circle Veterinarian Rathke expresses the opinion that the inoculation in Naulin and Megow offered no special advantages.†

In many outbreaks the animals formerly inoculated remained healthy; and when it was performed immediately after the diagnosis of the disease, it brought the plague to a standstill. Circle Veterinarian Jost argues in favor of obligatory necessity inoculation,‡ and considers a remuneration desirable for the small losses which follow the operation. On the other hand, doubts are being raised against the advantages of inoculation. In four herds of the circle Wanzleben, the plague disappeared after a few head became sick, although no inoculation had been practiced. In Hohenziatz of the circle Jerichow I, 182 head were inoculated four weeks after the first case of the disease, nevertheless 75 were affected and 42 after a repeated inoculation, and so severely that their destruction had to be performed by order of the authorities. In Biensleben, circle Wernigerode, a cow sickened on January 15, 1882, which had been inoculated on August 12 and December 12, 1881.§

In Beuchlitz, circle Merseburg, there was a herd of 168 head which had been inoculated on May 11, November 24, 1881, and February 3, 1882, in which of 10 head killed because of disease in the fourth quarter of the year 3 had been inoculated twice and 7 three times. Of 6 cows sick with lung plague in Lanchstedt, circle Merseburg, some were inoculated twice, others three times. In Kirchbaim, circle Erfurt, preventive inoculation was performed upon 121 head which belonged to eighteen farms, in consequence of the appearance of disease on one farm on June 30, 1881. After 21 days a slight swelling appeared at the end of the tail in all animals; 1 cow died in consequence of gangrene of the tail, and in 2 cows a part of the tail had to be amputated. On the 27th of October and 24th of November a cow sickened each day.

* *Jahresbericht der Königl. techn. Deputation für das Veterinärwesen über die Verbreitung ansteckender Thierkrankh. in Preussen.*

† Sixth Report, 1881-'82, p. 75.

‡ The Germans make a distinction between inoculation performed on animals which have been exposed to contagion and upon those which have never had an opportunity to be infected; in the former case it is called *necessity inoculation*, in the latter *preventive inoculation*.

§ Sixth Report, 1881-'82, p. 79.

In both animals a swelling of the tail had appeared after inoculation, and in 1 cow it was so severe that the end sloughed off.*

In Regierungs-Bezirk Magdeburg there were inoculated in all thirty-three herds; in twenty-five of these, for the most part extensive herds, the result was that none or but very few cases of disease appeared after inoculation. In individual large herds it has, however, been observed that only a small number of the animals sickened, although inoculation was not practiced. In Mammendorf, circle Walmirstedt, the plague remained restricted to the cows. Thirty-nine working oxen, which had been formerly inoculated, and were located in a stable twenty paces from the cow stable, did not contract the disease; on the other hand, lung plague appeared in an ox which had been purchased and was not inoculated. Department Veterinarian Müller states that in the seven sugar factories of the circle Walmirstedt the newly-purchased cattle are regularly inoculated, and that since this has been done lung plague does not appear in these herds. He, however, had thus far opportunity of observing lung plague in two sugar factories of the circle Walmirstedt and at a time when the precaution of inoculation had been omitted for a year. In eight herds lung plague made rapid progress in spite of inoculation and produced considerable losses. These unfavorable results are partly explained by the inoculations being undertaken very late, and after the plague had made important progress in the way of infection. In Hamersleben, circle Oschersleben, 2 oxen sickened in a severe degree which had been inoculated some time before with the best results.

The tables of Regierungs-Bezirk Merseburg report concerning inoculation in the following places: In circle Eckarlsberga a herd of 54 head, in Kannawurf, had to be slaughtered in spite of the timely inoculation, on account of the extensive spread of lung plague. In Heldrungen, with inoculation immediately after the discovery of the plague, 8 animals were affected out of 39 head. In Schwittersdorf and Etzdorf inoculation immediately performed resulted in only a third of the animals, with a swelling of the tail. In the circle and city of Querfurt the plague was cut short by inoculation. Two animals in Beuchlitz, killed on account of severe disease, had been inoculated twice or thrice with success. In Halle 2 head sickened, months after inoculation, by natural infection. Several times in Merseburg characteristic changes were found in the lungs of slaughtered animals which had been inoculated. In the province of Saxony there were found frequently in the lungs besides fresh, also quite advanced disease changes which belonged certainly to a lung-plague process a year old.†

In Brallentin the disease was diagnosed on November 12, and on the 23d 95 animals of the herd belonging to the estate were inoculated, and on the 29th the additional 14 cows belonging to laborers were operated upon. Even after the inoculations numerous cases appeared in the herd of the estate, the last one on the 18th of January. From that day to April 1, 1884, no animal had contracted the plague.‡

The eighth report gives information that in Knoblanchshof the plague had been diagnosed the year before, and inoculation practiced immediately had no success—it being necessary to slaughter the entire herd in the first quarter of the year reported on. In the third quarter the disease appeared anew among the animals purchased after the evacuation of the stable. Inoculation was then credited with arresting the

*Sixth Report, p. 81.
†*Jahresbericht*, &c., 1882-'83, p. 89.
‡*Jahresbericht*, &c., 1883-'84, p. 82.

plague after a slaughter of 11 out of 134 head. In Lödersburg the disease continued from the last quarter of the preceding year. Triple inoculation had no effect upon the course of the outbreak. In Gröningen, Huy-Neinstedt, and Neudamm inoculation was practiced and no further mention was made concerning it. In spite of the inoculation the entire herd in Gröningen was sold for slaughter. In one case the disease was introduced from Marienrode and Actum, and the inoculation practiced in these two places protected only a small number of animals from the disease. Reviewing the inoculations of the year the report goes on to say that the operation has been introduced, according to the tables, into twenty-five herds, of which nineteen belonged to the province of Saxony. In nine herds there were either no further cases of lung plague or only a small number. In six herds, on the contrary, inoculation was not successful; the number of cases which developed was very considerable, and the entire herds were finally slaughtered. Concerning the results in the remaining ten herds the statistics give no further information.*

The ninth report contains some additional statistical material from the province of Saxony in regard to inoculation. In Stresow, of 36 oxen, 5 sickened before inoculation and 9 afterwards. Only 2 showed a reaction after operation. April 17, 65 cows were inoculated, among which, up to that time, no sickness had been observed. The inoculation failed to take, and on April 24, 2 cows sickened with lung plague. The second inoculation made at this time was followed by a reaction, and on June 10, 2 more cows became sick. No other cases appeared. In Frohse 33 head were inoculated and no further cases of disease occurred. In Langenweddingen 35 animals were inoculated four weeks after the appearance of the disease. Five became sick before the operation and 2 afterwards. At Körbisdorf in Merseburg the manner of the introduction of the contagion was not determined; 22 head sickened which had been successfully inoculated in April or September, 1883; 2 of these had lost half of their tails in consequence of the operation. In 4 oxen old sequestra were found by the side of recent lesions. At Oberwunsch, in Querfurt, on one place lung plague had prevailed since the end of 1883. At that time the owner had sold 10 sick cows secretly and kept 4 oxen, which sickened in the second quarter, and showed at the autopsy old sequestra in the lungs. The plague spread to four other places of the village. After 18 head had died in one place 64 were inoculated, and after the inoculation 10 others were very severely attacked. In Eptingen, of 78 head inoculated in July, 1883, 63 had to be killed by order of the police. The tables of the year show that inoculation was practiced in seventeen herds, of which one each were in the departments of Stralsund, Liegnitz, and Hanover, and fourteen in the province of Saxony. In eight of these herds the inoculation was followed by the cessation of the disease, but with reference to the remaining nine herds there is either no definite information or the statement is made that the plague spread very extensively in spite of the operation, and necessitated the slaughter of numerous animals. The tables of the department of Merseburg mention several times the outbreak of lung plague in animals which had been inoculated with full success in 1883–1884.†

AUSTRIA.

Inoculation does not appear to have been very largely practiced in Austria, judging from recent reports. In 1881 it was only resorted to in Lower Austria, Moravia, and Galicia. In Bohemia, where lung

* *Jahresbericht*, &c., 1883–84, pp. 86, 87, 92.
† *Neunter Jahresbericht*, &c., 1884–'85, pp. 85–95.

plague prevails quite extensively, it is expressly reported that even necessity inoculation was not practiced during the year. In Lower Austria necessity inoculation was performed only in Ringelsdorf, in a herd of 81 cows and 2 steers. The result was not favorable, for among the inoculated ones 17 had to be slaughtered, and with 7 cows the tail was lost by gangrene. In Moravia necessity inoculation was resorted to without success on several farms of the circle Leipnik. It was also performed without success on several farms of the circle Wischau, and the inoculated animals were sent to the abattoir, a considerable number being found diseased. In the report from Galicia it is stated that preventive inoculation was not undertaken, but that on the other hand the beeves on the infected farms were subjected to necessity inoculation, but no definite information concerning the result is given.*

In 1882 it is stated that inoculation was only practiced on two farms in Bohemia, and was without any special influence on the progress of the plague. In Moravia it was resorted to on but one farm of the circle Auspitz, but with such poor success that, on slaughtering, the greater number of the inoculated animals were found affected with lung plague. In Galicia necessity inoculation was reported with good results on infected farms of the circles Krakau and Mielec; but Röll remarks, "in what this good result may have consisted is unfortunately not to be learned from the report."†

GRAND DUCHY OF BADEN.

Of this country Dr. Wehenkel says:‡

In this country they extolled inoculation formerly, but they ceased to have recourse to it and recommended slaughter—but slaughter without mercy, sacrificing the animals suspected as well as those affected, and in a short time they mastered the plague. This still reappeared, indeed, here and there, but generally as a consequence of importing contaminated animals from Würtemberg, a country where inoculation continued to be in vogue, and where the disease none the less continued to increase its ravages. But Würtemberg is a part of the German Empire, and the legislation of the Empire is applicable to it; the general law on epizootics for the whole of Germany has appeared, and since then the Grand Duchy of Baden suffers much less from the nearness of this country.

FRANCE.

This is one of the few countries where the inoculation of infected herds is made compulsory, but we unfortunately have not full statistics in regard to the results. A number of veterinarians have, however, published their records, and these will be found very interesting. M. Heu reports results of 360 inoculations from 1860 to 1881. Of the animals inoculated, 13 afterwards died from pleuro-pneumonia, and 15 others contracted it and recovered.§ M. Verrier, of Provins, reported that in 1881 fourteen stables were observed by the veterinarians of the sanitary service, in which pleuro-pneumonia existed. In these, 251 animals were sick or had been exposed, 129 were slaughtered because of the disease, 19 died, and 22 recovered. In these stables 199 animals were inoculated, of which 116 took the disease and were slaughtered, and only 83 resisted it. M. Savary reports that pleuro-pneumonia appeared in the stables of M. Giot, where there were 97 fattening animals. All were inoculated, but all, without exception, sickened one after another, and it was necessary to slaughter them. With another farmer the plague appeared in July, and in spite of inoculation and reinoculation continued

* *Röll, Veterinär-Bericht*, 1881, p. 82.
† *Veterinär-Bericht*, 1882, p. 67.
‡ Belgium Report, 1881, p. 44.
§ *Rec. de Méd. Vet.*, 1883, pp. 87–89.

until October 4, when the last one sickened and was killed.* M. Verrier states that the losses from inoculation are not heavy, as the deaths do not exceed 4 to 5 per cent.† M. Leblanc reports to the *Société Centrale de Médecine Vétérinaire* that M. T., a breeder, is a partisan of inoculation. Every cow entering his stable is operated on at once. Still, for five years he has continually had cases of pleuro-pneumonia. May 16, 1882, M. Leblanc saw a case of the disease at the slaughter-house, which had come from this stable. The 18th he had 50 cows that were in the stable inoculated; 42 had been operated upon before, among the rest a Dutch cow. February 3, 1883, this cow showed symptoms of pleuro-pneumonia. *Post mortem* examination the following day showed in the lower part of the right lung an old lesion of pleuro-pneumonia and in the upper part a new lesion only a few days old. This cow had had two attacks of pleuro-pneumonia and had been inoculated twice, all within a year.‡ M. Mathieu reports that in two stables, each containing 16 cows, inoculation was practiced about six weeks after the introduction of the disease. The surrounding conditions were substantially the same. At the first visit, February 13, 2 cows were sick in each. In stable A, 1 died and the other was killed February 16, and serum from its lung used to inoculate the remaining 14. February 15, the 2 sick in stable B were destroyed and the remaining 14 inoculated from one of them. In stable A the success was perfect. In stable B, 8 animals were slaughtered between February 28 and March 15, and *post mortem* examination revealed most marked lesions of pleuro-pneumonia.§

In the report of the military veterinarians to the minister of agriculture || the following particulars are given in regard to the accidents and losses which occurred during their inoculations:

Deaths from inoculation.

Month.	Animals inoculated.	Deaths.	Month.	Animals inoculated.	Deaths.
April	251	.....	September	113	1
May	243	1	October	121	1
June	221	4	November (1st half only)	59	.....
July	214	3			
August	132	.....	Total	1,354	10

We believe that this small proportion of deaths should be attributed in part to our active interference as soon as symptoms indicating danger were reported to us.

In addition to the fatal accidents we have to report the loss of tails, which also was not great, as we only counted about 15 tails lost (1 to 100), and 30 with which small pieces of the extremity, varying between 10 and 40 centimeters, separated.

A considerable number of animals, about 40, had diffuse swellings extending as high as the base of the tail, and extending more or less along the sacrum, the hips, the perineum, and sometimes even around the anus and the vulva, and penetrating more or less into the pelvic cavity. The greater part of these accidents were followed by the total loss of the tail; but, thanks to the treatment employed, the animals completely recovered their health, if not all of their commercial value, when it concerned work oxen or milch cows. We have observed that the accidents were more frequent in summer, during extremes of heat, than in other seasons.

* *Rec. de Méd. Vét.*, 1883, pp. 83–85.
† *Rec. de Méd. Vét.*, Mar. 30, 1883, p. 85.
‡ *Rec. de Méd. Vét.*, Mar. 30, 1883, p. 91.
§ *Rec. de Méd. Vét.*, Apr. 30, 1883, pp. 139–140.
|| *Rec. de Méd. Vét.*, 1885, pp. 391–392.

The following tables, giving statistics of inoculations as recorded by different veterinarians, will give a very accurate idea of the results of this practice in France:

For the department of Seine-et-Marne, 1881 *(reported by M. Verrier).*

Number herd.	Number inoculated.	Number sick before inoculation.	Sick slaughtered after inoculation.	Number herd.	Number inoculated.	Number sick before inoculation.	Sick slaughtered after inoculation.
1	97	1	97	7	8	2	.....
2	8	1	.....	8	12	6	1
3	6	2	2	9	8	2	4
4	4	1	2	10	15	2	6
5	23	1	5				
6	28	1	3	Total	209	19	120

Statistics of inoculations observed by M. Mollereau, near Paris, from June, 1883, *to September,* 1884.†

Name of owner.	Date of slaughter of first sick cow.	No. of animals inoculated.	Animals killed after inoculation.				Unsuccessful.
			First week.	Second week.	Third week.	Fourth week.	
	1883.						
1 Ve., B. Charenton	June 20	25	1	1	.....	.....	1, Aug. 4.
2 L., Maisons	Aug. 23	9	.....	2	.....	.....	1, Sept. 17.*
3 D., Charenton	Sept. 19	17	1	.....	.....	.....	
4 M., Alfortville	Sept. 21	9	.....	2	2	.....	
5 O., St. Maurice	Oct. 22	21	.....	3	.....	.....	
6 G., Maisons	Nov. 27	6	.....	.....	.....	1	
	1884.						
7 B., St. Maur	Jan. 10	13	.....	.....	.....	.....	
8 R., Charenton	Feb. 3	15	.....	.....	.....	.....	
9 S., Maisons	Mar. 28	12	2	1	.....	1	
10 H., St. Maur	May 20	29	.....	.....	.....	.....	
11 T., Ivry	May 23	14	3	.....	1	.....	1, July 15.
12 B., St. Maur	Aug. 2	16	1	.....	.....	.....	
13 P., Paris	Aug. 5	18	.....	.....	.....	.....	
14 L., Charenton	Aug. 6	30	1	.....	.....	2	
15 B., Charenton	Aug. 11	10	1	.....	.....	.....	1
16 Ve. B., Charenton	Aug. 11	26	.....	.....	.....	.....	
17 L., St. Maur	Aug. 19	18	.....	.....	.....	.....	
18 K., Vincennes	Aug. 29	20	1	.....	.....	.....	
19 R., Charenton	Sept. 19	14	2	.....	.....	.....	
Total	.....	322	13	9	3	4	4

* Died from inoculation.

**Rec. de Méd. Vét.*, Mar. 30, 1883, p. 120.
†*Rec. de Méd. Vét.*, Dec. 30, 1884, p. 436.

*Statistics of inoculations, department of Seulis, 1881–'82.**

Name of owner.	Date of first case.	Date of inoculation.	Number sick before inoculation.	Number inoculated.	Number cases after inoculation.	Deaths caused by inoculation.
	1881.	1881.				
1 M. Pr., Bouillunoy	Sept. 1	Sept. 5	1	44	4	1
2 M. Fr., Verneuil	Sept. 2	Sept. 17	1	30	5	.....
	1882.	1882.				
3 M. Be., Silly	Jan. 20	Jan. 24	2*	40	1	.....
4 M. De., Acy	Mar. 15	Mar. 17	1	27	4	1
5 M. De., Acy	Mar. 20	Mar. 21	1	24	1	1
6 M. Pe., Villers	Apr. 3	Apr. 17	2	33	.....	.....
7 M. Po., Plailly	May 19	May 21	1	48	2	.....
8 M. Bé., Plailly	Unknown.	June 10	7	41	13	.....
9 M. S., Seulis	June 13	June 16	1	20	.....	.....
10 M. R., Rully	Nov. 22	Nov. 28	1	2	.....	.....
11 M. Po., Ere	Nov. 23	Nov. 29	1	6	.....	.....
12 M. Cl., Verberie	Dec. 20	Dec. 26	1	3	1	.....
Total	.....	.....	20	318	31	3

* Of which one recovered.

DEPARTMENT OF CLERMONT.

1	Feb. 16	Feb. 18	3	34	.....	.....
2	Mar. 10	Mar. 25	1	8	.....	.....
3	Apr. 15	Apr. 17	1	36	.....	.....
4	Nov. 4	Dec. 3	4	72	3	.....
Total	.....	.....	9	150	3	.....

DEPARTMENT OF BEAUVAIS.

1	June 29	June 29	1	5	.....	.....
2	July 19	July 19	1	5	.....	.....
3	Aug. 15	Aug. 21	4	10	4	.....
4	Dec. 5	Dec. 5	1	13	1	.....
5	Oct. 28	Dec. 26	2	2	.....	.....
Total	.....	.....	9	35	5	.....

The statistics for the department of the Seine for 1882 are given by M. Leblanc, as follows: †

Statistics of inoculations for the Department of the Seine for 1882.

Proprietor.	Date of first case.	Date of inoculation.	Number of animals.	Losses after inoculation.	Remarks.
	1882.	1882.			
C., Rue de Chaillot	Jan. 4	Jan. 14	27	10	Losses from January 8 to April. Two new cases end of year.
D., Rue de Latour	Feb. 1	Feb. 3	26	3	Losses in February and March.
F., Rue Spontini	Oct. 7	Nov. 9	12	3	Losses in November and December. Continue in 1883.
H., Rue Bois-le-Vent	July 21	Aug. 2	18	5	Losses ceased end of September.
J., Rue Ernestine	June 14	June 26	21	5	Losses should be greater, as slaughter was resorted to by owner without inspection.

* Cagny, *Rec. de Méd. Vet.*, Mar. 30, 1883, pp. 128–129.
† *Rec. de Méd. Vét.*, Mar. 30, 1883, pp. 98–101.

Statistics of inoculations for the Department of the Seine for 1882—Continued.

Proprietor.	Date of first case.	Date of inoculation.	Number of animals.	Losses after inoculation.	Remarks.
	1882.	1882.			
B., Rue Lafayette	Sept. 29	Oct. 7	22	9	Losses on October 13, 28, 30; November 2. Reinoculated October 31. Losses November 12, January 23, both inoculated twice. February 11, 2 animals, one a new one.
T., Rue Lafayette	Mar. 15	Mar. 19	58	8	Had always inoculated, but pleuro-pneumonia had existed for five years. March 19 was a reinoculation. Losses after this on March 27, April 21 (2); another mildly affected and recovered, June 8, January 3, February 3. Cow No. 10, twice inoculated, showed on *post mortem* old and recent lesions.
—, Rue Riberal	June 27	July 6	19	4	Losses July, August, September.
S., Rue du Chateau	Sept. 15	Oct. 17	14	5	Losses October and November.
M., Rue du Chateau	Feb. 20	Mar. 10	9	5	Losses April and May.
M., Rue Olivier de Seres	Aug. 22	.....	20	6	Inoculated by owner after case of August 22.
Do	Jan. 27	Mar. 31	78	5	Losses May, June, and July.
S., Rue de l'Abbé Grault	Feb. 10	Mar. 11	15	6	Losses April, May, and August.
P., B. de Grenelle	June 10	July 10	16	3	Losses August and September.
D., Rue Croix-Nivert	Jan. 19	Mar. 1	15	6	Losses March, July, August, September.
G., Rue Croix-Nivert	Feb. 23	Mar. 11	15	7	Losses April, May, August, November.
O., Boudy	Feb. 17	Feb. 28	12	5	Losses March, April.
H., Boulogne	Apr. 12	Apr. 17	30	5	Losses July, August, September.
R., Boulogne	July 6	Sept. 5	9	2	Losses October.
B., Boulogne	Oct. 6	Oct. 27	9	3	Losses November and December.
M., Billanscourt	Mar. 23	Mar. 26	17	9	Losses April, May, June.
F., Cournervie	Oct. 5	Dec. 18	15	3	Losses December. Continue in January.
G., Ivry	Dec. 31	Feb. 12	8	4	Losses January, February, March.
D., Fontenay	June 15	June 27	19	2	Losses June, July.
D., Issy	Dec. 5	Dec. 14	24	6	Losses December, January, February.
Total	.....	.....	528	129	

M. Leblanc also reports that of 1,037 animals inoculated in the department of the Seine in 1882, 3 died from the operation; 115 sick ones were slaughtered before inoculation, and 152 afterwards. He considers that from one-fourth to one-third show no reaction from the operation.*

AUSTRALIA.

Perhaps no more extravagant claims have been made for the beneficial effects of inoculation in any part of the world than were made in regard to its results in Australia. From this comparatively new and distant country but fragmentary reports have been obtained, and these have usually come from unscientific enthusiasts who took into consideration only the cases where the results appeared favorable and left out of consideration the unfavorable ones. Indeed, there does not appear to have been any supervision of inoculation there, and no records have been kept showing the number of animals in the inoculated herds, the number that died before and after the operation, and the number which died from the operation itself. Without such statistics it is absolutely impossible to form any opinion of any value as to whether this operation has been beneficial or detrimental to the interests of the country. Fleming, in his Veterinary Sanitary Science and Police, says,

* *Rec. de Med. Vét.*, Mar. 30, 1883, pp. 92-93.

"In South Africa and the United States of America, as well as in Australia, the measure (inoculation) has also been adopted with great benefit" (I, 432). This remark in regard to the results of the measure in the United States has the effect of leading an American to anticipate that there might be a difference of opinion in regard to Australia. Fleming's work was written in 1874, and the following year the province of New South Wales issued a blue book on this subject which was so ably reviewed in the Pall Mall *Gazette* that a portion of this review is reproduced here. It shows very plainly that the provincial government had no accurate statistics in regard to the practice there, that there was the most radical difference of opinion among the cattle-owners as to whether any benefit had been derived from it, and that many had met with unfavorable results. The following is the review referred to:*

The honorable the legislative assembly of New South Wales is greatly exercised in its administrative mind on the subject of the repression of diseases affecting live stock – a question which appears to be of as difficult solution at the antipodes as in any other part of the world. After the manner of European Governments it has caused a blue book to be compiled, printed, and laid upon the table of the house; which document, like many of its kind, contains an immense amount of matter and very little useful information. The mass of replies to official questions, of which it is chiefly composed, shows the usual amount of empirical opinion, and something more than the usual quantum of negative testimony. The question at issue—the efficacy of inoculation as a preventive and palliative of pleuro-pneumonia—can scarcely be considered by impartial critics to have been elucidated in the smallest degree, and the result of the official inquiry may be accepted as an additional proof to those already existing of the utter insufficiency of such means to the attainment of definite and practical information for the guidance of the Government. A careful analysis of the report will show, apart from its contradictory and conflicting testimony, the unreliability of the data supplied, and the almost total absence of competent scientific observation. The charge of "meagerness" so frequently urged by the chief inspector of stock to the New South Wales legislative assembly against the returns of these stock-owners who are unfavorable to inoculation may with equal justice be applied to the information given by those who are favorable to it. There is certainly no balance of intelligent testimony in this report in favor of the plan.

A number of statistical tables, consisting of averages and percentages calculated from every conceivable point of view, are admirably adapted to the formation of a blue book, but they are worse than useless when constructed upon unreliable data. The imposing effect of statistical deductions is undeniable, but they complicate rather than simplify the subject matter; and the ordinary reader, overwhelmed with figures, gladly accepts the eliminated inferences, rather than do personal battle with their intricacies. Very opposite deductions from those arrived at by the compiler of this report may be made by using his own figures and his own arguments. For example, taking one of the percentage tables of the report, it will be found that of the 272 owners of uninoculated herds who made a return, 50 are represented as expressing an unfavorable opinion of the practice, 54 as being favorable to it (but not practicing it), 13 as being doubtful, and 155 as offering no opinion at all.

In respect to this the report says: "Although the owners who reply to this question are almost equally divided in opinion as to the efficacy of inoculation, still the majority is on the side of those who are in favor of that treatment. This is fully all that could be expected from those who have hitherto refused to try inoculation; and is of itself a very strong proof of its efficacy." The logic of this is not very apparent; and if no stronger proof of the efficacy of inoculation can be adduced than the fact of those professing to believe in it refusing to practice it, Mr. Bruce's arguments will scarcely suffice to prove his case. When the whole number are non-practicers, where is the value to be attached to the opinions of the fifty-four professed believers? And yet, from this percentage table, not only is a majority claimed in support of inoculation, but it is also put forward as a "strong proof of its efficacy." Instances of this kind are not rare in this report. Here is another: The number of circulars issued by the authorities was 1,400; the number of replies was 554, of which 282 were from owners who inoculated their herds (or portions of them) and 272 from those who did not. By way of extenuating these ominous figures it is claimed that the figures do not include *all* who practice inoculation, and that "many owners of large herds who have on former occasions reported on inoculation have not done so in this instance"; and in respect of the 272 who do *not* practice it, that although "that number of replies was certainly received," yet they gave "in many cases no

* Veterinarian, 1876, p. 788.

information at all, and nearly all failed to reply to the questions put to them." It is also further suggested that these owners were induced to withhold information, from fearing "to afford an opportunity of contrasting the effect of the disease in inoculated and uninoculated herds." It might, however, with seemingly equal justice, be deduced from the facts that (1) all those who made no reply were certainly careless about the scheme, and therefore not particularly in favor of it; (2) that this negative testimony is greater numerically than the positive; (3) that this number should be added to that of the confessed non-practicers, making an overwhelming majority; (4) that the fact of a large number of those who formerly reported, by omitting to do so on this occasion practically convey their disapprobation of inoculation; (5) that the returns of those who do not practice inoculation are not more "meager" than the returns of those who do, and are to all intents and purposes of the same numerical value.

One more example: Of the 282 owners who practiced inoculation 234 express opinions in its favor, 19 are opposed to it, 11 are doubtful, and 7 offer no opinion. This table is made to show 13 to 1 in favor of inoculation, whereas the figures may quite as legitimately be made to show only 6 to 1 in its favor, as those who are doubtful and those who offer no opinion may as fairly be classed with those who object as with those who assent. I contend that if these tabulated returns were thus manipulated the figures would have at least equal value to that attached to them in their present form; and it is with just such worthless calculations that red-tape columns are usually filled. So much for the statistics.

After minute and careful analysis of the report, I am bound to confess that the only opinion I can form, strictly from the *evidence* is, that so far as the real question at issue is concerned, there is no reliable evidence at all. It has not contributed one iota to the sum of knowledge already possessed on the subject. There is no real value to be attached to this echo from the wilderness. There are points upon which there may be said to be unanimous agreement, such as the danger of the operation when performed at seasons of extreme temperature, or under conditions of excitement, fatigue, or precontracted disease, or with unsuitable exudate, or in an improper manner—these may safely be accepted as facts, but they are not new. This much has for a long time been perfectly understood. The insidious nature of the disease, the variations in the duration of its incubatory stage, the time taken to complete its course, were all well known to veterinary science, and therefore the vague generalizations on these phenomena, embodied in the report, can scarcely be accredited with even confirmatory value. The opinions expressed with regard to the non-contagious nature of the disease, although supported by what are called facts—but which are in reality nothing more than misapprehensions of the causes of certain effects—are not of a feather's weight in the balance of modern veterinary science; that part of the question has been finally settled. In fact, when the reports are summarized the result is an incongruous mass of incompatible statements. It will be necessary to give extracts of some of the returns of this report.

No. 8.—"No time elapsed before the disease was stayed (after inoculation), and the cattle were quite well again in a month or five weeks. * * * Sometimes it put back cattle considerably, and it was two months before they were doing well, but I have had them show no ill effects * * * in favor (of inoculation), nor do I believe any one who has given it a trial can be otherwise; yet much has to be learned about it, and nothing proved as yet."

No. 9.—"I believe it is a sure preventive against the disease. * * * None of the inoculated cattle were afterwards affected, and they were exposed to the disease."

No. 13.—"We are very doubtful about the result of inoculation. * * Many of the inoculated cattle were exposed to the infection, and odd ones died of it."

No. 17.—"Very few die from the effects—perhaps 1 per cent. Every beast that died with pleuro or that we killed to get virus never showed the mark of inoculation."

No. 37.—"We lost from 6 to 8 per cent. (from inoculation). We consider that inoculation is of no use. We killed more cattle by inoculation than if we had left them alone."

No. 45.—"If the operation is performed in the autumn months, the result is as a 'chip in porridge,' but if practiced in the spring the results are more disastrous. * * * I am most decidedly in favor of it in other people's herds, but will never try it again in my own. Mr. Bruce finds time hang heavily on his hands, and 'Satan finds,' &c."

No. 46.—"It (pleuro) will never leave it (the herd) or the colony either. We are in favor of inoculation, although till very recently we were strenuously opposed to it; but we value our liberty, so don't make it compulsory."

No. 55.—"A decided stoppage of pleuro-pneumonia; believed to be the result of inoculation."

No. 76.—"The result of my inoculation was very satisfactory; I do not believe it cures or prevents the disease, but checks the severity. As soon as the cattle were inoculated no more deaths occurred."

No. 94.—"Though once a strong believer in its being a preventive of pleuro, practice has proved it to be utterly useless. * * * Any one believing in it must have had little experience—he merely is a theorist. * * * Have seen cattle inoculated when diseased, and the pleuro pass off in a few days, as from the results of inoculation—then six months afterwards, when mixed with the other clean cattle, take it again and suffer worse than the uninoculated cattle, and disease pass off just in the same mysterious manner. * * * I know of four herds from 40 to 200 miles apart, which on a given day were perfectly free from pleuro, had all of them *simultaneously* an outbreak which could be fixed to within forty-eight hours * * * among inoculated as well as uninoculated cattle. People often inoculate just as the disease has gone through the herd, and then ascribe to inoculation the result simply of nature."

No. 113.—"I believe that the disease is a visitation of Providence, and that it will run its course notwithstanding all that can be done to prevent it."

No. 133.—"I would rather not inoculate (again) from my present experience. I have bought pleuro cattle and put them into a paddock with the healthy ones several times, but none of the others were affected afterwards. I have seen healthy calves suck cows until the mothers have died, still the calves remain healthy for, I am certain, a year."

No. 136.—"It does not act as a preventive, but it has stopped the virulence of the disease. In 1866 the fat cattle were sold to the Australian Meat Company. In consequence of the establishment not being ready at the time, I inoculated the Ramornie herd. I drafted out all the fat cattle in the camps and left them uninoculated. I could discover little difference in the percentage of deaths in the one case or the other * * * It would be impossible to inoculate to eradicate a disease, when the presence of the disease is always necessary for the purpose of inoculation."

No. 137.—"On the first appearance of the disease * * * I took half the cattle from the camp and inoculated them; none died, but the uninoculated died in great numbers; they were all mixed together again."

No. 152.—"I am convinced, beyond a doubt, that if cattle are properly inoculated you may turn them into a diseased herd with perfect safety. * * * When inoculation was first introduced, a very large percentage of the cattle died from the effects of inoculation. The sole cause of this was want of knowledge."

No. 171.—"I feel sure my herd was saved by inoculation, and yet I am puzzled at the circumstance of 10 milking cows, which were not inoculated, having escaped the disease. * * * It can do no harm and may do good. * * * I am greatly opposed to compulsory inoculation."

No. 188.—"We have always found that cattle that were left alone recovered from the disease as soon, and had less losses amongst them than those that were inoculated."

No. 19 (Appendix C).—"The people who fill in these forms are, with a few exceptions, utterly incompetent to make a scientifically accurate observation, and any other is worse than useless, as it tends to mislead."

No. 46.—"Opposed to inoculation from observation during many years. * * * Out of a herd of about 1,000 I lost, I think, 9 head from pleuro, while neighbors with a few hundred head and practicing inoculation lost nearly their all."

No. 188.—"From my own experience I can justly say I have seen more cattle die from the effects of inoculation and yarding than I have from the disease in herds that were left in quietness."

No. 245.—"All is guess-work. When my herd was affected the herd on the opposite side of the creek was also affected; they were inoculated and died more than mine. * * * I am convinced it is impracticable in bush herds and useless where practiced."

No 271.—"In 1865 we had about 4,000 head of cattle, and they commenced to die from pleuro. We never inoculated. Two of our neighbors had about 1,000 cattle each. They both inoculated. Our cattle left off dying about the same time as our neighbors who inoculated."

If my readers can form an opinion as to the utility of inoculation from these reports, I cannot. Mr. Bruce has formed an opinion, but I do not consider it is warranted by the evidence. No doubt he is right in stating that tuberculosis is often mistaken for pleuro, that all sorts of errors have been made by non-believers, and that the legislative assembly had a right to expect better things of the stock-owners; but it seems to me that he has not advanced his theory in the slightest degree. The only positive result of inoculation that has been proved, strictly from the evidence, is a swelling of the tail, with a probability of a part of that organ having to be sacrificed, and the possibility of death to the animal.

UNITED STATES OF AMERICA.

Inoculation as practiced in the United States has usually been performed by veterinarians in private practice or by empirics. Recently

the State authorities of New Jersey, Pennsylvania, and Maryland have inoculated to a considerable extent. But in none of these cases have any records been made and published which are of any value in deciding upon the benefits derived from the operation. Occasionally we hear of instances where the inoculation of a herd is followed by disastrous results, as was the case with the inoculation of the Holstein-Friesian herd of William Koch, of Staten Island, New York, by the State veterinarian. We also know that in Brooklyn and Baltimore, where the operation has been most extensively practiced, the disease is most firmly established, and that inoculation has accomplished nothing towards extirpating it. So far as we have been able to learn, the effects of the operation here have not differed materially from what has been observed from its practice in Europe, with the exception that the inoculated herds in America have not been securely quarantined; that such quarantine as was enforced was of insufficient duration, and that then the inoculated animals have been allowed to go again into the commerce of the country as though they had never been infected.

GENERAL SUMMARY.

In order to bring the results of the more definite statistics referred to above together, the following table has been arranged, which, while it is lacking in some respects, is still of considerable value:

Locality.	Number inoculated.	Sick before inoculation.	Sick after inoculation.	Died from inoculation.
Holland, 1881 (Leblanc)	24,594	.....	267	272
South Holland, 1884	4,769	.....	335	59
Kingdom of Saxony:				
1882	64	3	11	.....
1883	471	34	52	2
Prussia:				
Naulin and Megow	260	.....	107	.....
Hohenziatz	182	.....	75	.....
Kirchbain	121	.....	2	.....
Kannawurf	54	.....	54	.....
Heldrungen	39	.....	8	.....
Knoblanchshof	134	.....	11	.....
Stresow	31	5	9	.....
———	65	.....	4	.....
Frohse	33	.....	.....	.....
Langenweddingen	35	5	2	.....
Querfurt	65	18	10	.....
Eptingen	78	.....	63	.....
Austria:				
Ringelsdorf	83	.....	17	.....
France:				
M. Heu	360	.....	28	.....
M. Verrier, of Provins	199	.....	116	.....
M. Giot	97	.....	97	.....
Mathieu	28	4	8	.....
Seine-et-Marne	209	19	120	.....
Mollereau, near Paris	322	.....	33	.....
Department of Senlis	318	20	31	3
Department of Clermont	150	9	3	.....
Department of Beauvais	35	9	3	.....
Department of Seine	1,027	115	152	3
Total	33,833	241	1,618	339

This makes a loss from pleuro-pneumonia after inoculation and from the results of the operation of 6 per cent.; or, if we leave the Holland statistics of 1881 out of consideration, as there appears to have been many animals inoculated at that time that were not exposed, this loss is increased to 14.3 per cent. If, now, we leave the Holland figures of 1881 out of consideration, as before, and add to the deaths from pleuro-

pneumonia after inoculation, those which occurred before the operation, as well as the losses which resulted directly from the practice, we find that the losses in the inoculated herds reached 16.8 per cent., and this notwithstanding the fact that in many cases the number which sickened before inoculation is not given, and in other cases there is no reference to the losses from the operation.

The following table of the results of inoculation was collected by Reynal some years ago; the original table was larger than this one, but I have left out of consideration all of those cases where no history of the herd after inoculation was obtained.*

Country.	Number inoculated.	Number successful.	Loss of tail.	Gangrenous swellings.	Died from inoculation.	Contracted pleuro-pneumonia.
Belgium	9,163	7,263	682	22	237	540
France	2,181	1,658	524	10	79	78
Holland	8,643	6,024	229	2	73	1,012
England, Germany, Austria, Italy	2,861	1,567	147	19	101	594
Total	22,848	16,512	1,582	53	490	2,224

	Per cent.
Proportion successful	72.4
Proportion with loss of tail	7.0
Proportion with gangrenous swellings	0.23
Proportion of deaths	2.15
Proportion contracted pleuro-pneumonia	9.75

In the cases of inoculation grouped together in this table it is seen that the losses from inoculation and from pleuro-pneumonia, after the operation, reach 11.9 per cent., and there is no information as to the losses in these herds before inoculation was practiced.

It would seem that from the statistics of so large a number of inoculations we should be able to get a clear idea of the beneficial effects of this practice, especially if these effects are so striking as is maintained by its advocates. The tables given above make it evident that the losses in inoculated herds, where large numbers are considered, vary under different circumstances between 12 and 17 per cent., and this with very incomplete records of the losses which occurred before the operation was resorted to. If now we compare this percentage with the losses among infected herds where no inoculation is practiced, we will be surprised to find how little difference there is in the result. Thus in Austria with so few herds inoculated that it could have no effect on the general figures, we find in 1881, with 59,502 animals exposed, a loss of 2,967, or 5 per cent.; in 1882, with 40,417 exposed, a loss of 2,174, or 5.4 per cent.; and in 1883, with 14,838 exposed, a loss of 1,473, or about 10 per cent. In Prussia, in 1881–'82, with 10,154 animals exposed, there was a loss of only 1,856, or 18.3 per cent.; in 1882–'83 this proportion was increased to 22 per cent., and in 1883–'84 to 24.7 per cent. In the Kingdom of Saxony this proportion was, in 1882, only 12 per cent., while in 1883 it rose to 24 per cent. In Bavaria, in 1881–'82 the loss was 20 per cent. of the exposed.

A careful scrutiny of these figures fails to reveal any material difference in favor of inoculation, and if the statistics were complete as to the number of deaths before the operation was performed, a point which is necessary to make the comparison complete, there certainly would not be as much difference between the losses in the inoculated and uninocu-

* *Zundel, Dictionnaire Hurtrel d'Arboval*, III, 96.

lated herds as there is between the losses in uninoculated herds in the same country but in different years. The conclusion must be, therefore, that inoculation has had no appreciable effect in decreasing the number of cases of pleuro-pneumonia which develop in exposed animals, if we count with such cases the losses from the operation itself.

In reaching this conclusion we do not wish to be understood as doubting the fact that immunity may be conferred by the practice of inoculation. The latter is a scientific fact which the writer believes has been demonstrated satisfactorily. There is a distinction to be drawn here which is too often forgotten, viz: Between the abstract scientific fact and its practical application for the prevention of disease. That immunity may be conferred by inoculation is granted, but only when the proper conditions are secured; thus, if the lymph is properly obtained from a case of pleuro-pneumonia at the proper stage of development, if this lymph contains the virus in sufficient quantity, if the operation is properly performed, and the virus is absorbed and the animal has not been infected before the operation, there will probably be a certain degree of immunity conferred. In practice, however, it has been impossible to combine these conditions, and where the operation has apparently succeeded the immunity has often not been complete and the disease would be contracted, in a milder form, it is true, but still sufficiently active to propagate the affection. Then the losses from the operation have been considerable and have varied from 1 to 10 per cent.; but the average has not been much less than 2 per cent.; this loss, added to the cost of inoculating, makes of itself a very heavy tax on the owners of cattle. Again, it is very evident from the many statistical returns given above that inoculation is powerless to prevent the development of pleuro-pneumonia in an animal which has been infected before the operation is performed, and as inoculation is resorted to only after one or more cases of the plague have developed in a herd, it is evident that the greater part of the animals are infected before the operation, and that the susceptible ones will sicken in spite of it.

Whatever our opinion may be, therefore, of inoculation from a scientific standpoint, or whatever reasons we may advance to explain the losses in inoculated herds, we cannot escape the conclusion that practically it has failed to realize the expectations of its advocates, that it has failed to extirpate pleuro-pneumonia in any country, and that it his also failed materially to reduce the losses where it is practiced.

WHY INOCULATION SHOULD NOT BE ALLOWED IN AMERICA.

With such a record in Europe as has been given in detail above, it is surprising that there should be strong partisans of inoculation in America, and yet we find such, not alone among practitioners who add to their income by recommending the practice, but also among State authorities, where we have a right to expect conservatism and a policy that will guard the interests of their State and country.

Whatever difference of opinion there may be in Europe as to the advisability of inoculation in such thoroughly infected centers as the *spoeling* district in Holland, the similar district in Belgium, the departments of Magdeburg and Merseburg in Saxony, and in the infected departments in France, there is a unanimity of opinion that it should not be practiced in recently infected sections, where the plague exists only in isolated herds and can be easily stamped out, or in any herd, unless it is practiced by the authorities and the herds retained under careful supervision. In our States it has been practiced in the most reckless

manner, not only in cities but in country districts where but two or three herds were affected in a whole county, and where the supervision has not been sufficient to prevent the transfer of stock.

Admitting all that is possible in favor of inoculation, we cannot at this day accept any assertion that this operation removes the infection from a stable or from a herd. As a matter of course it is not practiced until the plague has broken out and all the animals have been exposed, and the object of the practice is to preserve as many from death as possible. Now, in an infected herd of any considerable size, there are cases of all degrees of severity. Some animals will be acutely attacked and die within a few weeks; others will be sick and make partial recoveries, and still others will be attacked and very marked changes will be found in their lungs, but they will show no symptoms of disease. Those in the last class mentioned are just as dangerous as disseminators of disease as the first class, but when inoculation is practiced these animals are preserved. They are quarantined for two or three months, and then they may be sold and sent to any part of the country. In most countries of Europe an inoculated herd is kept under close quarantine until the animals are fit to be slaughtered, and then all are sent to the abattoir, and thus the contagion is extinguished. We have not thought so thorough a proceeding necessary, and the result is our inoculations are a menace to the country, instead of being at the worst a harmless proceeding to any but the owners of the inoculated animals, as is the case abroad.

The number of instances in which pleuro-pneumonia occurs in a form so mild that it is not observed even by the veterinarian is very considerable. Thus, in the French experiments of 1851, the autopsies showed that in one lot of 11 animals there were 6 affected which had shown no symptoms during life.* In an outbreak in Kent, near Gravesend, among 79 cattle, which began about the middle of August, cases occurred every week until 40 of these animals had been slaughtered diseased. The local authority, with the consent of the owner, then determined to slaughter the remainder of the herd which were supposed to be healthy. The examination of the lungs after death showed that 12 of these were affected with pleuro-pneumonia in various stages of the disease at the time they were slaughtered.† M. Verrier reports a case where, after the appearance of pleuro-pneumonia in a herd, 13 animals apparently well were slaughtered and a third of them presented well marked disease of the lungs. MM. Verrier, Heu, and Cagny expressed the belief that the continuance of pleuro-pneumonia in a stable after inoculation has been practiced is due to one or more of the animals being affected in this occult form of the disease.‡ In Prussia, in 1882–'83, there were two cases reported where lung plague broke out in herds more than six months after it was supposed the disease was extirpated; these herds had been carefully watched by the authorities and the fresh outbreaks were attributed to animals that had gone through the disease unnoticed and had preserved the contagion.§ Such cases are very frequent. It has also been observed that inoculated animals are dangerous to others for an indefinite time after the operation.‖ Probably this is due to the fact that such animals were really recovered cases of pleuro-pneumonia.

A herd of animals inoculated with pleuro-pneumonia virus is consequently an infected herd, and should be treated as such; with neither

* *Traité pratique des maladies de l'espèce bovine, Cruzel*, p. 543.
† Veterinarian, 1885, p. 834.
‡ *Rec. de Méd. Vét.*, Mar. 30, 1883, pp. 83, 86, 88.
§ *Jahresbericht*, 1882–'83, p. 88.
‖ Belgium Report, 1881, pp. 42–45

is there any safety in limiting the slaughter to such animals as may show symptoms of the plague; but if the malady is to be extirpated the whole herd must be slaughtered. In no other way can there be a certainty that all affected animals are destroyed or that the contagion is extinguished. It has long been remarked that when inoculation is introduced into a stable it must be kept up; every fresh animal that comes into the herd must be operated upon or it is liable to contract the plague. This is evidently because some members of the herd are affected in the occult form, and still disseminate the contagion; and it demonstrates the danger of allowing inoculated animals to be sold for any other destination than the slaughter-house.

From a careful study of the whole subject of inoculation for pleuro-pneumonia we conclude, (1) that this practice does not greatly lessen the losses which occur from lung-plague infection; (2) that it is powerless to extirpate pleuro-pneumonia from any country; (3) that it can only be practiced with safety to the community where the inoculated herds are kept under careful supervision, and where inoculated animals can only leave the infected premises to go to slaughter; (4) that there is no good reason for practicing inoculation in America, and that it should be prohibited by law, except where the conditions just mentioned are rigidly enforced.

QUARANTINE AT STATE LINES.

It must be admitted from a consideration of the facts given above that there is no reason to expect any aid in the extirpation of pleuro-pneumonia from either medical treatment or inoculation; indeed, both of these measures keep up the disease by preserving affected animals that for months are capable of disseminating the contagion. They should, consequently, be discouraged or even prohibited by law, because they add to the danger which already menaces our food supply and the freedom of our national commerce.

The next measure which has been proposed for the control of pleuro-pneumonia is a quarantine at State lines. This proposition has taken two separate and distinct forms; first, that all movement of bovine animals should be prohibited from States or parts of States in which this disease exists; secondly, that the movement of infected animals only from one State or Territory into another should be prohibited.

That Congress has power to prohibit the movement of cattle from an infected State to one that is not infected, and that this is the only way to effectually prevent the dissemination of pleuro-pneumonia if the contagion is allowed to exist, are conclusions which have not been contested. It is, however, a very harsh measure to entirely prohibit any branch of commerce between one section of the country and the remainder of it, and it is one that would entail much hardship and loss, the greater part of which would fall upon persons who have carefully guarded their herds from disease. Such action, in my judgment, is not to be recommended in a great commercial country like ours except as a last resort, and not until after it has been shown that less burdensome measures are impracticable or ineffectual. It has been urged that the quarantine of infected States would make it to the interest of those States to adopt such rules and regulations as would lead to the extirpation of the plague. This reason is based upon the assumption that there is a doubt as to the power of Congress to authorize any department of the Federal Government to send its agents into the States and enforce regulations for stamping out contagious diseases. If, therefore, it could be made

to the interest of the States to do this individually, the suggestion is made that Congress would be relieved of the embarrassment of attempting to accomplish a work to which its authority may not extend. It does not appear to me that the difficulty is at all avoided by this line of action. If, as has been maintained in the decisions of the Supreme Court since its formation, there exists in our complex form of Government two separate and distinct sovereignties, each independent of the other and each having its powers restricted by the Constitution of the United States, it would seem that any legislation of Congress that would have an effect to force action by the States that they would not otherwise take would be much more of an infringement upon the rights of the States than the legislation which this suggestion seeks to avoid. The States being sovereign within the sphere of duties assigned to them must have the same sovereign rights to refrain from legislation on subjects within their powers that they have to take action when it is to their interests to do so. If, therefore, it is not to the interest of the infected States to extirpate a disease under their police powers and for the protection of the health and property of their citizens, but is to the interest of the national Government to do this as a protection to national commerce, then it would appear preferable for Congress to provide for this work at the expense of the nation, rather than to take action which would force the individual States into a work which they do not care to assume.

State quarantines also fail for the time they are in force to afford that relief to commerce which is one of the chief reasons for asking legislation on the subject. While such quarantines are in force the same burdensome restrictions would exist in regard to inter-State commerce that it is so desirable to avoid, and the foreign restrictions on our cattle trade certainly would not be removed so long as it was necessary to impose domestic restrictions. Again, even after the disease was extirpated the national Government would not be in a position to give that unqualified guarantee to other nations that the country was free from dangerous diseases and would be preserved from them in the future, that could be given if its own officers had charge of this service.

As to the second method of procedure referred to, viz., the prohibition of the movement of affected animals from State to State as now provided for in the animal industry law, a very serious difficulty has been encountered in the attempt to enforce it. The person moving the animals is not liable to the penalty unless he knows that they are affected; and to establish in court the fact that he knew this the law provides that he shall be notified by the Commissioner of Agriculture; but there is no means provided in the law by which the Commissioner of Agriculture can secure this information. He has at present no authority to make an inspection unless through the courtesy of the owner of the animals, and in a number of cases this privilege has been refused, and probably will be whenever it is to the interest of the owner to prevent an inspection; that is, whenever he intends to move his animals into another State. Again it is an open question as to whether the term "affected animals" can be made to include cattle which have been exposed but which show no symptoms of disease; if not, then the object of the law could not be attained even if an inspection could be made.

A greater difficulty still, in the enforcement of this law, is the large number of infected herds which exist and the impossibility of keeping a constant supervision over all or even over any considerable part of them. By keeping up the inspections we would be continually adding to this number, and, having no means of freeing any herds from the

infection, this difficulty would be augmenting, with no prospect for relief. The publication of the existence of contagious disease in dairy herds, so long as it is known that no measures are adopted for its suppression, destroys the legitimate business of the owners of these herds, and is such an intolerable hardship to such owners that they would not submit to it for any great length of time, and, as a consequence, inspections would be impossible. We are unable even at present to make a thorough inspection for this reason.

It appears to me, therefore, that the idea of a quarantine at State lines, in either of the forms which have been considered, is impracticable, and will fail to accomplish the desired object. The freedom of commerce is a matter of too great importance to be interfered with except in cases of the most urgent necessity, and when no other measures are sufficient for the end in view; and I shall attempt to show that there is a more direct and efficient way to control contagious diseases than by such methods.

THE DIRECT EXTERMINATION OF THE CONTAGION.

The most economical, effectual, and satisfactory means of controlling contagious diseases, which the experience of the world has tested up to this time, is the immediate destruction of the contagion wherever it is found. To accomplish this, diseased and exposed animals are slaughtered, the premises are thoroughly disinfected, and no susceptible animals are allowed to come upon the place until a sufficient time has elapsed to make it certain that a fresh outbreak will not occur.

The desirability of such a course becomes plain when we consider how rapidly the quantity of contagious material is increased in the bodies of susceptible animals. An animal may be infected by a particle of contagious matter floating in the atmosphere and so small as to be invisible to the naked eye; but in a few days or weeks, when the period of incubation is passed, every drop of blood and every particle of flesh in the affected animal may become as virulent as the original infecting particle, and every breath exhaled is loaded with infectious atoms which carry disease to other subjects. A diseased animal may, therefore, be looked upon as a factory which goes on manufacturing and distributing contagion, day and night, in enormous quantities. While this multiplication of contagion is going on it is of little use to disinfect, and no quarantine can be absolutely certain to prevent the extension of the malady to neighboring herds. The infection may be carried in a hundred ways, upon the shoes or clothing of attendants, upon light objects driven by the wind, upon the feet and in the hair of animals, and by numberless other means.

An insurmountable objection to holding affected or exposed animals in quarantine is the difficulty or impossibility of maintaining an efficient quarantine. To keep up a constant supervision is out of the question, and whenever the inspector is out of sight the rules are broken, infected cattle are taken upon roads and commons and mingled with other herds, exposed or even sick ones are surreptitiously sold and fresh animals put in their places, and, in the end, the quarantine is often removed before the contagion has disappeared. This has been the great obstacle to the stamping out of such diseases by the individual States, and the same objection has been raised to quarantines in every country in Europe. There is scarcely a nation, having had experience in the work of controlling diseases of animals, which has not recognized the necessity of stamping out contagion as soon as it is found by the slaughter of all

infected animals. This method is of particular value, because it does away at once with the necessity of placing restrictions upon commerce; it relieves a locality of the odium and loss of trade which follows the declaration that a contagious disease exists there; it places it beyond the power of any one to scatter disease from that point; and it greatly lessens the period during which the business of the owner is interrupted. Of almost equal importance to the success of such work is the fact that infected herds do not accumulate and need the supervision of inspectors; and by no other method can the territory gone over be cleared from the plague as the work progresses.

In the end, the prompt slaughter of all infected animals is the most economical means of controlling diseases, because it admits of the work being done with a smaller number of inspectors, and it greatly lessens the time required to accomplish the work. Indeed, the desirability of the immediate extirpation of contagion is so apparent from every point of view that it is not necessary to enter into a more detailed consideration of this question.

AUTHORITY NEEDED TO EXTIRPATE CONTAGIOUS DISEASES.

Power to make inspections.—The first essential in any attempt to control contagious diseases is the power to enter upon premises and inspect the stock wherever it may be. Without such power the existence of contagious diseases cannot be determined. Owners frequently have no means of determining the nature of a malady from which their animals may be suffering, and oftener still they are satisfied as to the character of their affliction, but prefer that others should be kept in ignorance of it. With either breeding herds or milk dairies the business of the owner is generally destroyed as soon as the public learns that the animals are affected with pleuro-pneumonia, and consequently, the endeavor to keep the public in ignorance of it is an effort for self-preservation. The feeling that such diseases must be hidden is even stronger in the United States than in other countries, because those who have been so unfortunate as to introduce them among their stock are treated more harshly by the community here than in almost any other country. The individual States in an attempt to control pleuro-pneumonia at a nominal expense have placed infected herds in quarantine for an indefinite period. They have slaughtered animals for which insufficient compensation or none at all has been given. By publishing the existence of the disease they have ruined the owner's business; by only slaughtering diseased animals they have allowed the contagion to exist indefinitely, throwing the expense of keeping the herd upon the owner, who could do nothing but watch it in helplessness, while one after another the animals contracted the disease and were slaughtered. Such a course means absolute ruin to most owners, and it would be financial wisdom in them to allow every animal to be destroyed without compensation, when the plague was first discovered by the authorities, rather than be subjected to the indefinite suspense of business, the maintenance of the herd, and the final loss of the greater part of the animals.

Without entering into the discussion of the injustice of such a policy, it is very apparent that its application in the past has given rise to a hostile feeling in the infected districts in regard to official interference; and this feeling leads to concealment of the disease, to obstruction of inspectors, to the disregard of quarantine regulations. No efficient control of contagious diseases can be expected in the future without full power and authority to make inspections, and the enactment of severe penalties for those who obstruct or prevent this necessary work.

Power to enforce quarantine regulations.—When a diseased herd is discovered, it at once becomes necessary to prevent the animals in it from mingling with uninfected cattle and disseminating the contagion. No cattle should leave the premises, and none should come there while the infection exists; and proper measures should also be enforced to prevent the attendants or visitors from carrying the contagion to other herds.

In addition to this quarantine of an infected herd and premises, it sometimes becomes necessary to limit the movement of all susceptible animals in badly infected districts. Thus the indiscriminate mingling of cattle on commons is a frequent means of keeping up the disease in many places. In the suburbs of Brooklyn a half dozen herds often graze on the same vacant lots, and a single diseased cow may infect all. In such cities there are also unprincipled cattle-dealers who buy infected cows, take them to their own stables for a few days, and, as opportunity occurs, sell them again as healthy cattle. In this way, buying very low and selling at good prices, they make enormous profits and do incalculable damage by putting infected cows in healthy herds. As a matter of certainty, the stables of such dealers become infected, and so long as they are allowed to distribute cows from them new outbreaks of the disease continue to follow.

The power to enforce quarantine regulations should, consequently, be given in such general terms as will allow them to be modified somewhat to suit the conditions which exist at different places. In some localities it would not be necessary to prohibit animals from mingling on commons; in others, this would be almost essential to success; so in some localities it might be very desirable that no animals should be sold to go into other herds, but should be taken direct to slaughter-houses. These are matters of detail which, in my judgment, should be left to the Commissioner of Agriculture.

Power to condemn, appraise, and slaughter infected animals, and to compensate for them.—As has been already stated, the only way to extirpate a disease like pleuro-pneumonia is to stamp it out and destroy the contagion wherever found. To quarantine a herd is not sufficient; the plague may continue indefinitely, destroying one after another of the animals, and partially recovered cases will keep alive the infection for many months. No one can tell when it is safe to remove the quarantine restrictions from such a herd, nor can an efficient quarantine be maintained for a sufficient time to allow this disease to die out from natural causes. In every European nation which attempts to control pleuro-pneumonia, diseased and, in most cases, exposed animals are condemned and slaughtered by the State, and the owners received liberal compensation. Some of our States have laws authorizing the same measures, but the expense of carrying them out thoroughly is such that they do not accomplish the desired object. The prompt slaughter of diseased animals is essential to success in an attempt to stamp out this plague, and no law can accomplish this object without provisions granting authority to condemn and slaughter animals that are dangerous to the community. The question of indemnity being one of great importance, and one in regard to which there is much difference of opinion, it is discussed at some length below.

INDEMNITY FOR SLAUGHTERED ANIMALS.

The conclusion having been reached from the experience of the world that the only effectual method of controlling the contagious diseases of animals is to promptly stamp out all outbreaks as soon as discovered, by the slaughter of every infected animal, it becomes a question as to what indemnity should be allowed the owner for animals so slaughtered.

The Constitution of the United States provides that private property shall not be taken for public use without just compensation. In the slaughter of animals for this purpose private property is taken for public use. It is not to the interest of the individual that his animals should be slaughtered to check the spread of disease in a community. There are very few plagues which destroy every animal attacked, and equally few which attack every member of a herd. It is consequently plainly to the interest of the individual to preserve his animals rather than to have them slaughtered without compensation; for, by so doing, he secures the use of animals a certain length of time before they sicken, and he has the chance of the recovery, partial or complete, of a considerable number.

To conclude, as some are inclined to, that an animal affected with pleuro-pneumonia is not only worthless but a damage to the owner, is to be at variance with those who have had practical experience with the malady. There are instances in which such a conclusion may be correct—as, for example, when the first cow is attacked in a stable filled with these animals—but even then the owner may have the conveniences for isolating the affected one. On the other hand, in a majority of instances, it is so clearly to the interest of the owners to try to preserve their affected animals, that they will not listen for a moment to the idea of slaughter without compensation. In the Eastern cities we frequently find a widow and her family dependent for their support upon the sale of milk from a small herd of cows. Some of these are plainly affected, and all are dangerous to the neighboring herds with which they come in contact on the lots pastured in common; but in all cases the trouble may be so slight that it does not affect the milk supply and does not imperil the animal's life. To condemn and kill such animals is to take away the support of the family, and no ingenuity of argument can convince that poor widow that she has lost nothing by the operation. This same reasoning applies to the majority of herds in the infected districts. But one or two animals sicken at a time, and by keeping the herd in good condition and watching it closely these are disposed of to the butcher when they begin to cough, and before the disease has made sufficient progress to materially damage the flesh; or the affected ones may be isolated, and after a few weeks the majority of them will make sufficient progress towards recovery to be again useful.

While, therefore, the conclusion is unavoidable that the slaughter of animals to extirpate such a disease is an injury to the individual owner, it is equally plain that this proceeding is a great benefit to the community and the nation. The animals which the individual preserves and which are useful to him are, during their sickness, so many centers for the multiplication of the contagion; they endanger the stock of the whole community, and, unfortunately, this danger may continue for weeks or months after they have apparently recovered. To remove this danger and to prevent the extension of the infection to fresh herds, which almost invariably occurs sooner or later, it is to the interest of the community, the State, and the nation, to destroy the infected animals, and to compensate the owner for his loss.

Such compensation can neither be looked upon in the light of charity to the owner of diseased animals, nor as a system by which the unavoidable losses from natural causes are to be assumed by the State. The owner gets nothing by way of compensation for his losses from disease—he is only paid for such property as is taken by the public for the public welfare. This is a principle accepted and applied for the extirpation of pleuro-pneumonia by the chief civilized nations of the world, the most prominent exception being the United States of America.

AMOUNT OF INDEMNITY.

Admitting the propriety and necessity of granting indemnity for animals which have been seized and slaughtered as a measure for the prevention and suppression of contagious diseases, and we are confronted with the serious question of determining the value which is to be placed upon infected or actually diseased animals. If a single animal is considered by itself, it is impossible to say in the early stages of the disease whether it will live or die, how severely or how long it will be affected. It is equally impossible to decide whether an exposed animal will contract the plague or will resist the contagion. Practically, then, we must take into account the chances, as these are determined by the average proportion which contract the particular malady, and the number of these which afterwards become useful.

In last year's report the records were published of 34,682 head of cattle, which had undoubtedly been exposed to pleuro-pneumonia in Europe, and of these 7,449, or 21½ per cent., afterwards sickened. Records were also given of 1,773 cattle exposed in the United States, of which 501, or 28.2 per cent., became affected. It may be admitted, therefore, that with a large number of exposed animals, less than 30 per cent. will be affected with sufficient severity to manifest evident symptoms of disease. Of those plainly affected the average proportion that die from the effect of the attack is about one-third, while the remaining two-thirds make a more or less complete recovery.

These facts demonstrate that to the individual owner beasts affected with pleuro-pneumonia have a very considerable value. But in fixing this value, European nations take into account the question of State policy as well as of equity. It has been found by experience that a small indemnity leads the owners of animals to hide disease, to sell those affected or exposed, and thus to spread the malady; on the other hand, a liberal indemnity leads owners to report cases of sickness and to co-operate with the authorities in suppressing it. With a liberal indemnity the expenses for searching out disease (inspection) are consequently lessened, and many outbreaks are prevented, since there is not the same reason for parting with infected beasts. For this reason it really requires less money to extirpate the disease with a liberal indemnity than with a small one.

In this, as in regard to many other questions, it is the part of wisdom to utilize the experience of others. Most of the nations that have tried to extirpate pleuro-pneumonia began either with no indemnity or a very insufficient one for animals that it was necessary to slaughter. As a result of this mistake the plague continued to spread in spite of the expenditure of large sums of money, until nearly the whole of Europe was infected. But wherever the indemnity has been liberal, and a vigorous policy adopted the extension of the malady has been promptly checked, the number of cases has been regularly diminished, and in time it has been extirpated.

INDEMNITY IN EUROPE.

France.—Before the law of July 21, 1881, there was no indemnity accorded in France for animals affected with contagious pleuro-pneumonia, but in that law the following section was inserted:

ART. 17. There is allowed to the owners of animals slaughtered because of contagious pleuro-pneumonia, or dead as the result of inoculation, as provided in article 9, an indemnity regulated as follows:

Half of their value before the disease, if they are found to be affected.

Three-fourths if they have only been contaminated.

The total value if they die from the results of inoculation with contagious pleuro-pneumonia.

The indemnity to be accorded cannot exceed the sum of 400 francs for the half of the value of the animal, that of 600 francs for the three-fourths, and that of 800 francs for the total value.—(*Précis de Police Sanitaire Vétérinaire, F. Peuch, Paris,* 1884, p. 180.

England.—The way in which compulsory slaughter and indemnity is looked upon in England may be judged from the section on this subject in Fleming's Manual of Veterinary Sanitary Science and Police, Dr. Fleming being president of the Royal College of Veterinary Surgeons and principal veterinary surgeon to the army:

Compensation is the counterpoise of compulsory slaughter. Occision is, as we have just seen, the most certain and prompt means of extinguishing a contagious disease, and generally the most economical. But unless compensation is given to the owners it is a hardship and an injustice to resort to this measure, and leads to every kind of deception and evasion. Indeed, it cannot be otherwise. A contagious disease invades the stable or cow shed of a poor man; if its existence becomes known, the animals therein, which may constitute his entire fortune, will be slaughtered to prevent the extension of the malady, and he will be ruined. As a matter of self-preservation, therefore, for himself and family, he conceals the outbreak, to the imminent danger of his neighbor's animals, and perhaps to those of a whole county; and dreading loss from his stock dying of the disease, he clandestinely disposes of it as best he may, sending the sick or contaminated beasts to market, whence they may introduce the contagion hundreds of miles away. In acting thus he cannot be greatly blamed. The compulsory slaughter of the whole of a farmer's stock in some districts would be utter ruin to him, and he is certainly excusable in endeavoring to avert such a catastrophe, especially if the disease has just manifested itself. If he cannot quietly dispose of the animals in the market or elsewhere, even at a sacrifice, he has every reason to believe that they will not *all* die *if* left to nature; and whatever number may remain will keep him from beggary. He will not so much consider his neighbor's loss from the spread of the contagion as his own under such circumstances; for there are but few men who would destroy their own fortune to preserve that belonging to others.

If the destruction of an individual's property is necessary for the public welfare and in the interest of society, then certainly the public should recompense him to the full value of that property. Occision, as a legal measure, without compensation, will never be tolerated in a country like our own; or, if it is, it will only lead to fraud and concealment of the disease—both of which are most potent agents in spreading it.

The expropriation of an owner's horses, cattle, or sheep for the purpose of slaughter being, then, a measure of the greatest public utility, mere justice, to say nothing of policy, demands that public compensation to the integral value of every animal so sacrificed be awarded. The more liberally and equitably this is carried out, the more likelihood is there of obtaining every assistance from those whose aid is always of the utmost moment—the proprietors. Of the truth of this history affords abundant evidence, even in our own country.*

In all cases, therefore, in which animals are destroyed by authority, with the object of preventing the extension of a contagious disease, no matter what the malady may be, compensation should follow. The other sanitary measures are rendered easy and effective, especially those which are most essential—declaration and isolation.

The amount of compensation will vary, of course, according to the circumstances, but it must always be equitable and the full market value of the animals should be allowed. It is better to err on the score of liberality. For animals which are healthy or only suspected, a higher rate will be given than for those which are diseased and might probably die or be a long time in recovering.† This will be decided at the valuation.

The compensation was fixed by an order of council (341), dated December 20, 1871, and made under the contagious diseases (animals) act of 1869, which reads as follows:

(31) Where a local authority is authorized by the privy council to slaughter cattle affected with pleuro-pneumonia, such a local authority may cause all cattle af-

* It was truly astonishing to find members of Parliament, when this measure was proposed during the existence of the cattle-plague in this country in 1865-'66, oppose its adoption most vehemently, merely, it would appear, because it was a measure of fairness and justice to the agricultural community.

† With glanders and farcy—diseases which are incurable, and sooner or later terminate in death—full compensation need not be given; partial indemnity may, however, be allowed, in order to induce the owners to declare the existence of the maladies.

fected with pleuro-pneumonia within their district to be slaughtered, subject to the following provisions: (1) The local authority shall, by way of compensation for every such animal, pay to the owner thereof such sum, not exceeding twenty pounds, and not exceeding one-half of the value of the animal immediately before it was affected with pleuro-pneumonia, as to the local authority seem fit. (2) They may require the value of any such animal to be ascertained by their officers, or by arbitration, and generally they may impose conditions as to evidence of the slaughter and value of any such animal.

In the report of the professional officer of the privy council for 1876, p. 23, occurs the following statement as to the practical working of this method of compensation:

An unfortunate result of the treatment which owners of stock have met with at the hands of the authorities, is the determination at which many of them have arrived, to run all risks rather than incur the annoyance and loss which have attended their efforts to obey the law. It is alleged, and there is good evidence of the truth of the allegation, that the amount of compensation allowed is often ridiculously small, that inspectors are disinclined to condemn animals which are suffering from the disease in the early stage, and that owing to the delay which occurs before the order for slaughter can be obtained, every opportunity is given for the spreading of the affection, which might have been arrested at once, if the owner had been in a position to send for the butcher as soon as he had reason to suspect that the animal was attacked. These complaints, which are certainly known to be true in some cases, suggest grave defects in the mode of administering the law, which must be remedied before the full benefits of the existing sanitary regulations will be gained.

The contagious diseases (animals) act of 1878 contains the following section in regard to slaughter and compensation, which it will be seen is much more definite:

21. (1) A local authority shall cause all cattle affected with pleuro-pneumonia to be slaughtered within two days after the existence of the disease is known to them. (2) A local authority may, if they think fit, cause any cattle being or having been in the same shed or herd, or in contact with cattle affected with pleuro-pneumonia, to be slaughtered. (3) The local authority shall out of the local rate pay compensation as follows for cattle slaughtered under this section: (*a*) Where the animal slaughtered was affected with pleuro-pneumonia, the compensation shall be three-fourths of its value immediately before it became so affected, but so that the compensation does not in any such case exceed 30 pounds. (*b*) In every other case the compensation shall be the value of the animal immediately before it was slaughtered, but so that the compensation do not in any case exceed 40 pounds.

Germany.—The Imperial German law of 1880 contains the following section:

SEC. 59.—The ordinary value of the animal is to be afforded as compensation without consideration as to the decrease of value which it has suffered owing to its having been affected with disease. In the case of animals afflicted with glanders compensation is to be calculated at three-fourths of this value, and in case of pleuro-pneumonia at four-fifths.

The following are to be included in the compensation to be paid: (1) Insurances payable from private contracts, and equally in the case of glanders three-fourths; in that of pleuro-pneumonia, four-fifths; in all other cases, the full value. (2) The value of those parts of the animal killed, which remain at the disposal of the owner in accordance with the police regulations.—(Translation in An. Rep. Vet. Dep. Privy Council Office, 1880, p. 85.)

Austria-Hungary.—The Austrian law accords indemnities for animals slaughtered by order of competent authority. Indemnity may be given in all diseases considered contagious with the exception of rabies.

The amount of indemnity is established by a commission of three members. It is fixed at the mean value of the animal.—(*Précis de Police Sanitaire Vétérinaire, F. Peuch, p.* 360.)

Belgium.—The royal decree of September 26, 1883, provides as follows:

ART. 1.—An indemnity is accorded from the funds of the State to all owners whose horses or animals designated in article 7 of the royal decree of September 20, 1883, are slaughtered by order of competent authority, in the interest of the public health, for reason of one of the contagious diseases enumerated in said article.

(The diseases enumerated in the article referred to are glanders and farcy, contagious pleuro-pneumonia, sheep-pox, rabies, and cattle plague.)

ART. 5. The rate of indemnity is fixed as follows: One-third of the value of the cattle, sheep, goats, swine, and horses, as well as of other solipeds employed exclusively in agriculture. One-fifth of the value of the horses and other solipeds employed in any other occupation. However, the indemnity cannot in any case exceed the following sums: 150 francs for a horse used exclusively in agriculture; 100 francs for a horse used in any other pursuit, for a mule or a bovine animal; 50 francs for an ass; 10 francs for a sheep, goat, or pig. The average estimate of experts and of the Government veterinarians serves for a basis to determine the value of the slaughtered animals. However, when the estimate appears excessive, the rate of indemnity may, if there is reason for it, be reduced by the minister of the interior, after new information, and in proportion to the real value of the animals.—(An. Rep. Agricultural Dep. Privy Council Office, 1883, pp. 105–106.)

Holland.—The law of July 20, 1870, provides as follows:

ART. 24. The slaughter does not take place until after a previous expropriation. For expropriation for the purpose of slaughter, the burgomaster appoints an expert to determine the value of the animal. Here it must be observed that for suspected animals the full value is calculated, and for those affected with the plague one-half of their value in a healthy condition.—(*Die Seuchen und Herdekrankheiten unsere Hausthiere, Dr. H. Pütz, Stuttgart*, 1882, p. 637.)

Sweden.—The measures for the suppression of the contagious diseases of animals are prescribed in the law of February 27, 1866. The diseases considered contagious according to this law are anthrax, cattle plague, the "virulent contagious pneumonia of horned cattle," glanders and farcy with horses, sheep-pox and epizootic aphtha with sheep, and rabies with dogs. In cattle plague and pleuro-pneumonia the animals are slaughtered and an indemnity is granted equal to two-thirds of the value before the appearance of the disease.—(*Précis de Police Sanitaire Vétérinaire, Peuch*, Paris, 1884, p. 371.)

Roumania.—In this country the veterinary sanitary legislation is constituted by the law of May 27, 1882. This law considers the following diseases contagious:

Cattle plague in all species of ruminants; contagious pleuro-pneumonia of the bovine species; sheep-pox in sheep and goats; scabies in solipeds and sheep; epizootic aphtha in cattle, sheep, goats, and swine; contagious foot-rot in sheep and goats; glanders and farcy in solipeds; malignant venereal disease in horses designed for breeding; typhoid fever of swine; rabies and charbon in all species of domestic animals.

* * * * * * *

There is allowed by way of indemnity:

A. *The sound value.*—(1) Of the ruminants large or small, slaughtered as sick or suspected with cattle plague; (2) of the animals slaughtered with the object of establishing the diagnosis of a contagious disease, except for animals slaughtered to determine the existence of rabies; (3) of the solipeds slaughtered because suspected of glanders or farcy and with which the existence of one of these diseases cannot be decided by *post-mortem* examination; (4) of the cattle which die from the results of inoculation with the virus of contagious pleuro-pneumonia.

B. *Three-fourths of the sound value.*—(1) Of the cattle slaughtered because affected with contagious pleuro-pneumonia; (2) of the cattle slaughtered as suspected of contagious pleuro-pneumonia and at the autopsy of which the lesions produced by this disease cannot he found.

C. *Half of the sound value.*—Of the solipeds slaughtered as affected with glanders or farcy. In this case the indemnity cannot exceed the sum of 200 francs.—(*Précis de Police Sanitaire Vétérinaire, Peuch.* Paris, 1884, pp. 369–370.)

The Fourth International Veterinary Congress which met at Brussels in September, 1883, and which was composed of the leading members of the veterinary profession from all parts of the world, took up this question of indemnity for consideration. After a full discussion the following resolution was agreed to, and may be taken as an expression not

only of the veterinary profession, but of those official veterinarians who have had experience with this disease:

(25) An indemnity should be accorded to the owner for animals slaughtered by official order and for the expense of disinfection. The indemnity should amount to four-fifths of the value of the animals, and to the full value if the animal is found to be healthy, deduction being made for the value of parts of the carcass that may be utilized.

The "four-fifths of the value of the animals" in this resolution refers to the value just before the animal became affected; in other words, it means four-fifths of the sound value.

It will be seen by the above extracts that the principal nations of Europe grant a liberal indemnity for such animals as are slaughtered through official action to suppress the contagious diseases of animals. Other European countries have similar laws, but it has been impossible to obtain copies in time for this report. It may be stated as an incontestible fact, however, that the tendency of all these countries has been to increase the indemnity until it reaches to nearly or quite the full value of the animals before they were infected with the malady. Still it is evidently better from a national point of view to keep the indemnity somewhat below the sound value, in order to prevent the exposure of animals to disease for the sole purpose of disposing of them to the Government. A deduction of 20 or 25 per cent. from the sound value would be amply sufficient for this purpose. The most advanced sentiment is, consequently, in favor of making the indemnity equal to four-fifths of the sound value.

It is also seen that a number of countries limit the amount that may be paid for any one animal, evidently with the intention of preventing the payment of large sums for thoroughbred animals. The wisdom and equity of this action are certainly very questionable. The value of a thoroughbred animal is as much a real and tangible value as that of one which would simply be marketed for beef; and it is difficult to see why if one man is compensated for his property when it is expropriated for the good of the community another who has more valuable property should not be compensated in proportion to this increased value. It has been found in this country that under such provisions of law thoroughbreds are not slaughtered when they become infected, but are held in quarantine at great expense to the State, and are often the cause of restrictions on the commerce of a county or an entire State, which results in a loss many times the value of the herd originally affected, besides being liable to spread the plague during the whole of this time.

Taking all of these facts into consideration, the wisest policy seems to be that adopted by Germany, and recommended by the Fourth International Veterinary Congress, viz: The payment of an indemnity equal to four-fifths of the value of the condemned animals immediately before they were exposed to the contagion.

AMENDMENTS TO THE ANIMAL INDUSTRY LAW

Should you consider it desirable to recommend such legislation by Congress as will enable this Bureau to undertake the work of exterminating pleuro-pneumonia, I would suggest for your consideration the following amendments which the experience of the past has indicated as necessary to accomplish this purpose:

Amend section 1 by striking out the words "not to exceed twenty persons at any one time." This refers to the number of persons that can be employed. If the other sections are not amended, twenty employés

will probably be sufficient to do all that can be done under the law as it stands. If it is so amended as to authorize the Department to stamp out diseases, then there should be no limit on the number of employés; and as many should be authorized as are necessary to legitimately use the money appropriated for this work.

Strike out sections 3 and 4, and substitute in their place two new sections, to read as follows:

SEC. 3. That in order to promote the exportation of live stock from the United States, and to protect and facilitate the shipment of animals among the several States, the Commissioner of Agriculture shall make special investigation as to the existence of pleuro-pneumonia, or any contagious, infectious, or communicable disease of domesticated animals in all parts of the United States where he may have reason to suspect the existence of such disease or diseases. Upon the discovery of pleuro-pneumonia or other contagious, infectious, or communicable disease which endangers the foreign or inter-State commerce of the United States, the Commissioner of Agriculture is hereby authorized to establish and enforce such quarantine regulations, and to cause such disinfection of premises as are necessary to eradicate the disease. And, when in his judgment, the protection of the foreign or inter-State commerce requires such action, the Commissioner of Agriculture is authorized to cause the appraisal and slaughter of animals that are affected with, or that have been exposed to, any contagious, infectious, or communicable disease, and to compensate the owners for the same out of the fund appropriated for the purposes of this act: *Provided*, That such compensation shall not exceed four-fifths of the value of any animal before it was exposed to the disease.

SEC. 4. That any person who obstructs a duly authorized inspector of the Bureau of Animal Industry in making the investigations provided for in section 3 of this act, or prevents him from making such investigations, or who assaults such officer when in the performance of his duty, and any person who violates the quarantine regulations established by the Commissioner of Agriculture in pursuance of this act, or who obstructs or prevents the slaughter of animals as provided for in section 3, shall be guilty of a misdemeanor, and, upon conviction, shall be punished by a fine of not less than two hundred nor more than five thousand dollars, or by imprisonment for not more than one year, or by both such fine and imprisonment.

Strike out section 8 entirely.

In section 10 the sum of money appropriated should be increased to $350,000. A much larger appropriation than this has been generally considered necessary, but judging from the experience of the past two years good and effective work could be done with the amount named.

POWER OF CONGRESS.

Having shown the extent of pleuro-pneumonia in the country, and indicated in a general way the dangers to be feared from it, and having discussed the measures proposed for its extirpation, it is proper and desirable that I should lay before you at this time my reasons for believing that the measures which are advocated in this report may be constitutionally authorized by Congress. In the past there has been a strong feeling that any law which would empower a Federal official to go within the territorial limits of any State, enter upon private premises, examine cattle, condemn, slaughter, and compensate for those that are found diseased and disinfect the premises against the owner's wishes, would be unwarranted by the Constitution and a serious infringement upon those sovereign rights of the States which were reserved by them at the time of the adoption of the national Constitution. It has also been held as an objection to such laws that there is no precedent for the appropriation of money to grant relief to individuals whose property has been destroyed or rendered valueless by diseases or other natural causes.

That these objections to this class of legislation are too serious to pass over without notice is evident to all. Indeed, unless they can be answered, it would be absurd for me to submit a report embodying such

recommendations as are made above. The writer has long desired that this aspect of the question should be discussed by some one well versed in legal knowledge, and who at the same time was familiar with the wishes and views of those most interested in the animal industry of the country; but as no one has done this, it becomes imperative that some of the reasons for believing such legislation to be constitutional and desirable should be given in this connection. The question is approached with hesitation and with many misgivings as to the ability of the writer to handle the subject, which is essentially a legal one, in such a way as to present the position of the stockmen in its full strength to those who are accustomed to consider such matters from a legal point of view.

For the sake of convenience the second objection, referred to above, will be first disposed of. It is an objection which would not have been advanced if the position of those who ask for this legislation had been correctly understood. The stock-owners of the United States do not ask Congress to reimburse them or to grant them relief for the losses which they have suffered from disease. This question has never been seriously raised by them to my knowledge, and certainly such action is not desired by any considerable proportion of them. They simply ask that Congress shall, for the promotion and protection of the inter-State and foreign commerce of the United States, enact such laws for the control and extirpation of those contagious diseases of animals as are necessary to remove both the restrictions which have already been placed upon this commerce, and the dangers which threaten its very source. To accomplish this result all acknowledge that it is necessary to enforce regulations which will be temporarily a great burden to the owners of diseased and infected stock, and in many cases it will also be necessary to take this stock by the right of eminent domain and slaughter it to prevent the further dissemination of the contagion. The animals taken in this way, though infected or diseased, still have a certain value. They are often the entire dependence for the support of a family, and to take them without compensation is to seize and destroy the whole business capital which is relied upon to furnish the necessities of life. Such a proceeding is not only unjust and entirely foreign to the wishes of the stockmen of the country, but it is especially prohibited by the Constitution of the United States, which provides that private property shall not be taken for public use without just compensation.

It will be seen, therefore, that there is a very great difference in the real position of the stockmen who ask for this legislation, and in the position which they are assumed to occupy by those who raise these objections. The object of such legislation is to secure the extirpation of dangerous preventable diseases, but not to reimburse any one for animals which have died or may die from the effects of such diseases, and the details for accomplishing this object are such as have long been established, and are admitted in the laws of this and the leading countries of the civilized world.

The other objection mentioned above is pertinent to the subject, and deserving of more careful consideration; for, no matter how desirable a certain method of extirpating diseases might appear, if that method could not be carried out without conflicting with the Constitution of the country, no good citizen would advocate it without the greatest reluctance, and, certainly, not until every other plan had proved impracticable. To know whether any measures are constitutional it seems necessary to inquire for what purpose they are asked, and under which of the powers granted to Congress by the Constitution they are supposed

to come. Such an inquiry has not generally been made in the past when discussing the subject of legislation for the extirpation of the contagious diseases of animals.

EXTIRPATION OF CONTAGIOUS DISEASES FOR THE REGULATION OF COMMERCE.

As intimated above, the great reason for asking legislation from Congress on this subject is a commercial one, and the regulation is asked for as a regulation of commerce.

The Constitution provides that Congress shall have power to regulate commerce with foreign nations and among the several States and with the Indian tribes.

In an address which I had the honor to deliver at the National Convention of Stockmen, held at Chicago, November 17 and 18, 1885, it was stated that the suppression of contagious diseases of animals, looked at from a national standpoint, is a regulation of commerce, and nothing else. What was it that first directed the attention of the country to the existence of pleuro-pneumonia among cattle of the East? Was it appeals for help from the dairymen of that region? Did the interested States ask to be assisted in ridding themselves of the disease? On the contrary, the plague was concealed, its existence was denied, and there certainly was no desire in the worst infected regions for Federal interference.

On the other hand, the first event to awaken our stockmen to a realization of the existence of this serious danger was the British restrictions placed upon the live cattle trade. These restrictions, besides greatly reducing our trade, cost us at least one and a half millions annually, being the difference in what we now receive and in what the same cattle would bring if they were admitted without restrictions. In addition, the exportation of store cattle to England, which ought to be a large trade, is entirely prohibited. To secure the removal of these restrictions, that is, to regulate commerce, was the first great reason for asking national legislation on this subject.

Then the owners of the cattle in the States not yet infected began to realize their danger from an unrestricted commerce in animals from infected States, and they asked for such regulations as should protect them. But commerce has not been so regulated, and pleuro-pneumonia has been carried through the channels of commerce to Ohio, Illinois, Missouri, Kentucky, Tennessee, and West Virginia. We now see State regulations adopted by a whole group of States in the West, which, while they pretend to be local police laws practically regulate commerce on a gigantic scale, and which interfere with the movement of cattle to a very alarming extent. Cattle, the subjects of inter-State commerce, are stopped at State lines; they are delayed for inspection; if their history is not satisfactory they may be quarantined for months, whether sick or well; the owner is charged for inspection fees; he is put to extraordinary expense in holding his cattle; he may be stopped at the next State line and the next, and forced to undergo this delay and expense again and again, and, to crown all, the cattle from a whole State or section of the country are prohibited, when there may be but a single county infected and but a single diseased herd in this county. These regulations have cost the inter-State commerce of Kentucky, Tennessee, Missouri, Illinois, Ohio, Pennsylvania, New York, New Jersey, Maryland, and Texas millions upon millions of dollars during the past year, and they have excited rivalries and contentions which have led to

breaches of the peace in some instances and very nearly to bloodshed in others.

The desirability and importance of having inter-State and foreign commerce regulated exclusively by the Federal Government cannot be too strongly emphasized; and in this regulation is included of course measures for the promotion and protection of that commerce. The intolerable burden of State restrictions on commerce was felt and recognized before the formation of our Government, and to obtain relief from such restrictions seems to have been the very strongest reason for the adoption of the Constitution.

Mr. Webster, in one of his great efforts before the United States Supreme Court in 1824, said:

> Few things were better known than the immediate causes which led to the adoption of the present Constitution; and he thought nothing clearer than that the prevailing motive was to regulate commerce; to rescue it from the embarrassing and destructive consequences resulting from the legislation of so many different States, and to place it under the protection of a uniform law.
>
> * * * * * * *
>
> In the history of the times, it was accordingly found that the great topic urged on all occasions, as showing the necessity of a new and different government, was the state of trade and commerce. To benefit and improve these was a great object in itself, and it became greater when it was regarded as the only means of enabling the country to pay the public debt, and to do justice to those who had most effectually labored for its independence. The leading State papers of the time are full of this topic. The New Jersey resolutions complain that the regulation of trade was in the power of the several States, within their separate jurisdiction, in such a degree as to involve many difficulties and embarrassments, and they express an earnest opinion that the sole and exclusive power of regulating trade with foreign States ought to be in Congress. Mr. Witherspoon's motion in Congress, in 1781, is of the same general character, and the report of a committee of that body in 1785 is still more emphatic. It declares that Congress ought to possess the sole and exclusive power of regulating trade, as well with foreign nations as between States. The resolutions of Virginia, in January, 1786, which were the immediate cause of the convention, put forth this same great object. Indeed, it is the only object stated in those resolutions. There is not another idea in the whole document. The entire purpose for which the delegates assembled at Annapolis was to devise means for the uniform regulation of trade. They found no means but in a General Government, and they recommended a convention to accomplish that purpose. Over whatever other interests of the country this Government may diffuse its benefits and its blessings, it will always be true, as a matter of historical fact, that it had its immediate origin in the necessities of commerce, and, for its immediate object, the relief of those necessities by removing their causes, and by establishing a uniform and steady system. It would be easy to show, by reference to the discussions in the several State conventions, the prevalence of the same general topics; and if any one would look to the proceedings of several of the States, especially to those of Massachusetts and New York, he would see very plainly, by the recorded lists of votes, that wherever this commercial necessity was most strongly felt, there the proposed new constitution had most friends.
>
> * * * * * * *
>
> We do not find in the history of the formation and adoption of the Constitution that any man speaks of a general concurrent power, in the regulation of foreign and domestic trade, as still residing in the States. The very object intended more than any other was to take away such power. If it had not so provided the Constitution would not have been worth accepting.
>
> He contended, therefore, that the people intended in establishing the Constitution to transfer from the several States to a General Government those high and important powers over commerce which in their exercise were to maintain a uniform and general system. From the very nature of the case these powers are and must be exclusive—that is, the higher branches of commercial regulation must be committed to a single hand. (22 U. S., 11–13.)

In connection with this subject I said in the address already referred to that if that were true at the time of the adoption of the Constitution, when we had but 4,000,000 inhabitants and thirteen States, how much stronger are the reasons for a uniform national regulation of commerce at the present day with our 57,000,000 inhabitants and a great empire

stretching from the lakes to the gulf and from ocean to ocean? What makes it essential, however, that we should have uniform national regulations is the fact that the States of which this nation is composed are to-day bound together by railroads and telegraphs, by our extensive postal system, and by the interchange of newspapers, more closely than were the counties of any State at the formation of our Union. Trade, commerce, and travel go on as though there were no State lines. Trains heavily laden with living animals roll from the interior to the seaboard or from the seaboard to the interior, crossing State after State without regard to boundaries; and it is utterly impossible for local authorities to enforce any efficient system of inspection for the vast moving throng of animals at every point where it crosses from one State into another.

SUCH LAWS A REGULATION OF COMMERCE.

The first question that suggests itself is: Can laws for the extermination of animal plagues be construed as regulations of commerce? It has already been shown that there are now burdensome restrictions upon both our foreign and internal commerce because of the presence of such diseases among our stock, and that even the herds from which our enormous trade in living animals and their products is derived, a trade amounting to hundreds of millions of dollars every year, are threatened and attacked by these plagues. The restrictions now in force are regulations of commerce, and to remove them, to make it impossible for the contagia to be disseminated by inter-State commerce, would be no less a regulation of such commerce. As there is but one way of accomplishing this important result, and that is by the extirpation of the diseases which have led to the restrictions, which are distributed through the avenues of trade, and which threaten the source of a large part of our commerce, such extirpation plainly becomes a means of regulating commerce.

In the past a very liberal construction seems to have been given to this section of the Constitution granting the power to regulate commerce. It has been made to include such means as serves to develop and promote commerce, and such others as served to facilitate the movement of the subjects of commerce and to protect them from dangers during such movement. Pomeroy, in his well-known work on the Constitution, says:

> Under this grant Congress has assumed to enact laws for the improvement of harbors, the construction of piers, the erection of an astronomical observatory, the conduct of a coast survey. It has invaded the common law by limiting the liability of carriers on the ocean and the great lakes; it has sent out expeditions to observe an eclipse, and to explore the topography of the Dead Sea. All of these acts are, indeed, means which plainly tend to the regulation of commerce; none of them are indispensable to it. Yet, I think, it is not assuming too much to assert that the nation has settled down to the opinion that these and similar measures are proper and lawful (p. 166).

The same authority also says:

> Regulating means prescribing rules for carrying on the matter regulated, which rules may either place restraints and hindrances upon the free conduct of the intercourse and traffic, or may remove all restrictions upon the free enjoyment and exercise thereof. Whether Congress shall adopt one or the other of these systems, and propose to itself one or the other of these ends, is entirely a matter of policy with which courts have no concern (p. 244).

It seems very plain, therefore, that legislation which has for its object the protection of the cattle in all that part of the country west of the Allegheny Mountains and south of the Potomac River from a disease

to which they are only liable through an infected commerce, is a means of regulating commerce. And it certainly can be no less a means of regulating commerce to authorize such measures as will prevent such local restrictions as are now enforced in regard to the movement of cattle from one State or one section of the country to another, and from the United States to Great Britain.

It has already been decided, by the Supreme Court of the United States, that the regulations by which alone the individual States can protect themselves from such diseases are regulations of commerce, and unconstitutional, because they invade the domain of the legislation which belongs exclusively to Congress. By an examination of the State laws and State inspection and quarantine regulations, which may be found in another part of this report, it will be seen that all of them are essentially regulations of commerce. They do not apply to sick animals alone, but they include the cattle from a whole State or a whole section of the country; they require the owner to furnish proof that his animals have not been exposed to contagion, and if he fails to furnish this his herd is seized and placed in quarantine though not one of them shows any signs of disease. In some cases a tax has been levied upon every bovine creature that entered a State from other sections.

These regulations, though necessary to protect the uninfected States, are looked upon by the Supreme Court as plainly regulations of commerce, and though they were based upon the police powers of the States they are held to be unconstitutional. This will be seen by reference to the following case, the decision in which, owing to its great importance and direct bearing on our subject, is quoted in full:

Railroad Company v. Husen, 5 *Otto*, 465.—*Error to the supreme court of the State of Missouri.*

An act of the legislature of Missouri, approved January 23, 1872, 1 Wagner's Stat. 251, provides as follows:

"SECTION 1. No Texas, Mexican, or Indian cattle shall be driven or otherwise conveyed into, or remain in, any county in this State, between the first day of March and the first day of November in each year, by any person or persons whatsoever: *Provided*, That nothing in this section shall apply to any cattle which have been kept the entire previous winter in this State: *Provided further*, That when such cattle shall come across the line of this State, loaded upon a railroad car or steamboat, and shall pass through this State without being unloaded, such shall not be construed as prohibited by this act; but the railroad company or owners of a steamboat performing such transportation shall be responsible for all damages which may result from the disease called the Spanish or Texas fever, should the same occur along the line of such transportation; and the existence of such disease along such routes shall be *prima facie* evidence that such disease has been communicated by such transportation.

"SEC. 9. If any person or persons shall bring into this State any Texas, Mexican, or Indian cattle, in violation of the first section of this act, he or they shall be liable, in all cases, for all damages sustained on account of disease communicated by said cattle."

Husen brought this action against the Hannibal and Saint Joseph Railroad Company for damages alleged to have been done him by means of the company's violation of the foregoing act.

OPINION BY MR. JUSTICE STRONG.

Five assignments of error in this record; but they raise only a single question. It is whether the statute of Missouri, upon which the action in the State court was founded, is in conflict with the clause of the Constitution of the United States that ordains "Congress shall have power to regulate commerce with foreign nations and among the several States and with the Indian tribes." The statute, approved January 23, 1872, by its first section, enacted as follows: "No Texas, Mexican, or Indian cattle shall be driven or otherwise conveyed into, or remain in, any county in this State, between the 1st day of March and the 1st day of November in each year, by any person or persons whatsoever." A later section is in these words: "If any person

or persons shall bring into this State any Texas, Mexican, or Indian cattle, in violation of the first section of this act, he or they shall be liable, in all cases, for all damages sustained on account of diseases communicated by said cattle." Other sections make such bringing of cattle into the State a criminal offense, and provide penalties for it. It was, however, upon the provisions we have quoted that this action was brought against the railroad company that had conveyed the cattle into the county. It is noticeable that the statute interposes a direct prohibition against the introduction into the State of all Texas, Mexican, or Indian cattle during eight months of the year, without any distinction between such as may be diseased and such as are not. It is true a proviso to the first section enacts that "when such cattle shall come across the line of the State, loaded upon a railroad car or steamboat, and shall pass through the State without being unloaded, such shall not be construed as prohibited by this act, but the railroad company or owners of a steamboat performing such transportation shall be responsible for all damages which may result from the disease called the Spanish or Texas fever, should the same occur along the line of transportation; and the existence of such disease along the line of such route shall be *prima facie* evidence that such disease has been communicated by such transportation." This proviso imposes burdens and liabilities for transportation through the State, though the cattle be not unloaded, while the body of the section absolutely prohibits the introduction of any such cattle into the State with the single exception mentioned.

It seems hardly necessary to argue at length that, unless the statute can be justified as a legitimate exercise of the police power of the State, it is a usurpation of the power vested exclusively in Congress. It is a plain regulation of inter-State commerce, a regulation extending to prohibition. Whatever may be the power of a State over commerce that is completely internal, it can no more prohibit or regulate that which is inter-State than it can that which is with foreign nations. Power over one is given by the Constitution of the United States to Congress in the same words in which it is given over the other, and in both cases it is necessarily exclusive. That the transportation of property from one State to another is a branch of inter-State commerce is undeniable, and no attempt has been made in this case to deny it.

The Missouri statute is a plain interference with such transportation—an attempted exercise over it of the highest possible power—that of destruction. It meets at the borders of the State a large and common subject of commerce, and prohibits its crossing the State line during two-thirds of each year, with a proviso, however, that such cattle may come across the line loaded upon a railroad car or steamboat, and pass through the State without being unloaded. But even the right of steamboat owners and railroad companies to transport such property through the State is loaded by the law with onerous liabilities, because of their agency in the transportation. The object and effect of the statute are, therefore, to obstruct inter-State commerce, and to discriminate between the property of citizens of one State and that of citizens of other States. This court has heretofore said that inter-State transportation of passengers is beyond the reach of a State legislature. And if, as we have held, State taxation of persons passing from one State to another, or a State tax upon inter-State transportation of passengers, is prohibited by the Constitution, because a burden upon it, *a fortiori*, if possible, is a State tax upon the carriage of merchandise from State to State. Transportation is *essential* to commerce, or rather it is commerce itself, and every obstacle to it, or burden laid upon it by legislative authority, is regulation. (Case of State Freight Tax, 15 Wall., 232; Ward *v.* Maryland, 12 *Id.*, 418; Welton *v.* the State of Missouri, 91 U. S., 275; Henderson *et al. v.* Mayor of the City of New York *et al.*, 92 *Id.*, 259; Chy Lung *v.* Freeman *et al.*, *Id.*, 275.) The two latter of these cases refer to obstructions against the admission of persons into a State, but the principles asserted are equally applicable to all subjects of commerce.

We are then brought to the question whether the Missouri statute is a lawful exercise of the police power of the State. We admit that the deposit in Congress of the power to regulate foreign commerce and commerce among the States was not a surrender of that which may properly be denominated police power. What that power is it is difficult to define with sharp precision. It is generally said to extend to making regulations promotive of domestic order, morals, health, and safety—as was said in Thorp *v.* The Rutland and Burlington Railroad Company, 27 Vt., 149, "it extends to the protection of the lives, limbs, health, comfort, and quiet of all persons, and the protection of all property within the State. According to the maxim, *sic utere suo ut alienum non lædas*, which, being of universal application, it must, of course, be within the range of legislative action to define the mode and manner in which every one may so use his own as not to injure others." It was further said that, by the general police power of a State, "persons and property are subjected to all kinds of restraints and burdens, in order to secure the general comfort, health, and prosperity of the State; of the perfect right of the legislature to do which no question ever was, or upon acknowledged general principles ever can be made, so far as natural persons are concerned." It may also be admitted that the police powers of a State justifies the adoption of precautionary measures against social evils. Under

it a State may legislate to prevent the spread of crime, or pauperism, or disturbance of the peace. It may exclude from its limits convicts, paupers, idiots, and lunatics, and persons likely to become a public charge, as well as persons afflicted by contagious or infectious diseases; a right founded, as intimated in the Passenger Cases (7 How., 283), by Mr. Justice Greer, in the sacred law of self-defense (*vide* 3 Sawyer, 283). The same principle, it may also be conceded, would justify the exclusion of the property dangerous to the property of citizens of the State; for example, animals having contagious or infectious diseases. All these exertions of power are in immediate connection with the protection of persons and property against noxious acts of other persons, or such a use of property as is injurious to the property of others. They are self-defensive.

But whatever may be the nature and reach of the police power of a State, it cannot be exercised over a subject confided exclusively to Congress by the Federal Constitution. It cannot invade the domain of the national Government. It was said in Henderson *et al. v.* Mayor of the City of New York *et al.*, *supra.*, to "be clear from the nature of our complex form of Government, that whenever the statute of a State invades the domain of legislation which belongs exclusively to the Congress of the United States, it is void, no matter under what class of powers it may fall, or how closely allied it may be to powers conceded to belong to the States." Substantially the same thing was said by Chief Justice Marshall in Gibbons *v.* Ogden (9 Wheat., 1). Neither the unlimited powers of a State to tax, nor any of its large police powers, can be exercised to such an extent as to work a practical assumption of the powers properly conferred upon Congress by the Constitution. Many acts of a State may, indeed, affect commerce, without amounting to a regulation of it, in the constitutional sense of the term. And it is sometimes difficult to define the distinction between that which merely affects or influences and that which regulates or furnishes a rule for conduct. There is no such difficulty in the present case. While we unhesitatingly admit that a State may pass sanitary laws and laws for the protection of life, liberty, health, or property within its borders, while it may prevent persons and animals suffering under contagious or infectious diseases, or convicts, &c., from entering the State; while for the purpose of self-protection it may establish quarantine, and reasonable inspection laws, it may not interfere with transportation into or through the State, beyond what is absolutely necessary for its self-protection. It may not, under cover of exerting its police power, substantially prohibit or burden either foreign or inter-State commerce. Upon this subject the cases in 92 U. S., to which we have referred, are very instructive. In Henderson *v.* The Mayor, &c., the statute of New York was defended as a police regulation to protect the State against the influx of foreign paupers, but was held to be unconstitutional, because its practical result was to impose a burden upon all passengers from foreign countries, and it was laid down that "in whatever language a statute may be framed, its purpose must be determined by its natural and reasonable effect." The reach of the statute was far beyond its professed object, and far into the realm which is within the exclusive jurisdiction of Congress. So in case of Chi Lung *v.* Freeman, where the pretense was the exclusion of lewd women, but as the statute was more far-reaching and affected other immigrants, not of any class which the state could lawfully exclude, we held it unconstitutional. Neither of these cases denied the right of a State to protect herself against paupers, convicted criminals, or lewd women, by necessary and proper laws, in the absence of legislation by Congress, but it was ruled that the right could only arise from vital necessity, and that it could not be carried beyond the scope of that necessity. These cases, it is true, speak only of laws affecting the entrance of persons into the State, but the constitutional doctrines they maintain are equally applicable to inter-State transportation of property. They deny validity to any State legislation professing to be an exercise of police power for protection against evils from abroad, which is beyond the necessity for its exercise wherever it interferes with the rights and powers of the Federal Government.

Tried by this rule, the statute of Missouri is a plain intrusion upon the exclusive domain of Congress. It is not a quarantine law. It is not an inspection law. It says to all natural persons and to all transportation companies, "You shall not bring into the State any Texas cattle or any Mexican cattle or Indian cattle, between March 1 and December 1, in any year, no matter whether they are free from disease or not, no matter whether they may do an injury to the inhabitants of the State or not; and if you do bring them in even for the purpose of carrying them through the State without unloading them, you shall be subject to extraordinary liabilities." Such a statute, we do not doubt, is beyond the power of a State to enact. To hold otherwise would be to ignore one of the leading objects which the Constitution of the United States was designed to secure.

In coming to such a conclusion, we have not overlooked the decisions of very respectable courts in Illinois, where statutes similar to the one we have before us have been sustained. (Yeazel *v.* Alexander, 58 Ill., 254.) Regarding the statutes as mere police regulations, intended to protect domestic cattle against infectious disease,

those courts have refused to inquire whether the prohibition did not extend beyond the danger to be apprehended, and whether, therefore, the statutes were not something more than exertions of police power That inquiry, they have said, was for the legislature and not for the courts. With this we cannot concur. The police power of a State cannot obstruct foreign commerce or inter-State commerce beyond the necessity for its exercise; and under color of it objects not within its scope cannot be secured at the expense of the protection afforded by the Federal Constitution. And as its range sometimes comes very near to the field committed by the Constitution to Congress, it is the duty of the courts to guard vigilantly against any needless intrusion.

Since the above decision was rendered various attempts have been made to avoid its application by changing the phraseology of the laws and regulations, by calling them inspection and quarantine laws, and by insisting that the reserved police powers of the States are the source from which the authority is derived. It is not probable, however, that these State regulations are made in any way more nearly constitutional by such changes. In the case of Henderson *v.* Wickam it was held that:

In whatever language a statute may be framed, its purpose must be determined by its natural and reasonable effect. (92 U. S., 259.)

The following language used in the same decision makes it still more plain that a law designed by a State to accomplish this object would meet with the same objection in the Supreme Court, no matter in what terms it should be framed:

This power, frequently referred to in the decisions of this court, has been, in general terms, somewhat loosely called the police power. It is not necessary for the course of this discussion to attempt to define it more accurately than it has been defined already. It is not necessary, because whatever may be the nature and extent of that power, when not otherwise restricted, no definition of it and no urgency for its use can authorize a State to exercise it in regard to a subject-matter which has been confided exclusively to the discretion of Congress by the Constitution.

Nothing is gained in the argument by calling it police power. Very many statutes, when the authority on which their enactments rest is examined, may be referred to different sources of power, and supported equally well under any of them. A statute may at the same time be an exercise of the taxing power and of the power of eminent domain. A statute punishing counterfeiting may be for the protection of the private citizen against fraud, and a measure for the protection of the currency and for the safety of the Government which issues it. It must occur very often that the shading which marks the line between one class of legislation and another is very nice and not easily distinguishable.

But however difficult this may be, it is clear from the nature of our complex form of government that whenever the statute of a State invades the domain of the legislation which belongs exclusively to the Congress of the United States it is void, no matter under what class of powers it may fall or how closely allied to powers conceded to belong to the States. (92 U. S., 259.)

If such laws are necessary to protect the States and regulations of commerce, it follows that the States are powerless to prevent the introduction of contagious diseases, and that the required measures are so intimately related to regulations of inter-State commerce that Congress alone can act effectually to secure this result.

Conceding, then, that measures for the control and extirpation of pleuro-pneumonia, and similar contagious diseases of animals, may be properly construed as regulations of inter-State and foreign commerce, we have still to inquire if, under the authority granted in the Constitution to regulate this commerce, the power of Congress can extend into the interior of the States and enable Federal officers to carry out the details for the extirpation of such diseases. It is admitted in the animal industry law that the owners of affected animals and the officers of transportation companies may be notified of the existence of a contagious disease, and that if they then ship such animals from one State

or Territory into another they will be liable to the penalties imposed by that law. But before such parties can be notified of the existence of disease, it is necessary for the inspectors of the Bureau of Animal Industry to discover it, and hence it is necessary to make inspections. To make inspections, however, it is necessary to have authority to go within the Territory of a State, to enter upon private premises and to examine the stock. As a matter of fact, therefore, the penalty provided for the shipment of affected cattle from one State into another cannot be enforced without power to make inspections and to discover the existence and nature of disease. This attempt to so regulate commerce as to prevent the dissemination of dangerous maladies from one State or Territory into another, must remain imperfect and of little practical value unless the additional authority is given to make inspections within the several States and Territories. The question for consideration may, consequently, be stated in this form: To what extent can Congress enforce its authority within the States for the accomplishment of an object (viz., the regulation of inter-State commerce) which is admitted to be within the exclusive jurisdiction of Congress? The decisions of the Supreme Court have been very explicit on this subject, and I take the liberty of quoting some of them at considerable length because of the great importance of the question at issue.

Chief Justice Marshall, in the case of Gibbons *v.* Ogden, (22 U. S., 186–222), said:

> This instrument contains an enumeration of powers expressly granted by the people to their Government. It has been said that these powers ought to be construed strictly. But why ought they to be so construed? Is there one sentence in the Constitution which gives countenance to this rule? In the last of the enumerated powers, that which grants expressly the means of carrying all others into execution, Congress is authorized "to make all laws which shall be necessary and proper" for the purpose. But this limitation on the means which may be used is not extended to the powers which are conferred; nor is there one sentence in the Constitution which has been pointed out by the gentlemen of the bar, or which we have been able to discover, that prescribes this rule. We do not, therefore, think ourselves justified in adopting it. What do gentlemen mean by a strict construction? If they contend only against that enlarged construction which would extend words beyond their natural and obvious import, we might question the application of the term, but should not controvert the principle. If they contend for that narrow construction which, in support of some theory not to be found in the Constitution, would deny to the Government those powers which the words of the grant, as usually understood, import, and which are consistent with the general views and objects of the instrument; for that narrow construction, which would cripple the Government and render it unequal to the objects for which it is declared to be instituted, and to which the powers given, as fairly understood, render it competent; then we cannot perceive the propriety of this strict construction, nor adopt it as the rule by which the Constitution is to be expounded. As men whose intentions require no concealment generally employ the words which most directly and aptly express the ideas they intend to convey, the enlightened patriots who framed our Constitution, and the people who adopted it, must be understood to have employed words in their natural sense, and to have intended what they have said. If, from the imperfection of human language, there should be serious doubts respecting the extent of any given power, it is a well-settled rule that the objects for which it was given, especially when those objects are expressed in the instrument itself, should have great influence in the construction. We know of no reason for excluding this rule from the present case. The grant does not convey power which might be beneficial to the grantor, if retained by himself, or which can inure solely to the benefit of the grantee, but is an investment of power for the general advantage, in the hands of agents selected for that purpose, which power can never be exercised by the people themselves, but must be placed in the hands of agents, or lie dormant. We know of no rule for construing the extent of such powers, other than is given by the language of the instrument which confers them, taken in connection with the purposes for which they were conferred.
>
> The words are: Congress shall have power to regulate commerce with foreign nations, and among the several States, and with the Indian tribes.
>
> The subject to be regulated is commerce; and our Constitution being, as was aptly said at the bar, one of enumeration and not of definition, to ascertain the extent of

the power it becomes necessary to settle the meaning of the word. The counsel for the appellee would limit it to traffic, to buying and selling, or the interchange of commodities, and do not admit that it comprehends navigation. This would restrict a general term, applicable to many objects to one of its significations. Commerce, undoubtedly, is traffic, but it is something more; it is intercourse. It describes the commercial intercourse between nations, and parts of nations, in all its branches, and is regulated by presenting rules for carrying on that intercourse (pp. 187–190).

* * * * * * *

To what commerce does this power extend? The Constitution informs us, to commerce "with foreign nations, and among the several States, and with the Indian tribes."

It has, we believe, been universally admitted that these words comprehend every species of commercial intercourse between the United States and foreign nations. No sort of trade can be carried on between this country and any other to which the power does not extend. It has been truly said that commerce, as the word is used in the Constitution, is a unit, every part of which is indicated by the term.

If this be the admitted meaning of the word in its application to foreign nations, it must carry the same meaning throughout the sentence and remain a unit, unless there be some plain, intelligible cause which alters it.

The subject to which the power is next applied is to commerce "among the several States." The word "among" means intermingled with. A thing which is among others is intermingled with them. Commerce among the States cannot stop at the external boundary line of each State, but may be introduced into the interior.

It is not intended to say that these words comprehend that commerce which is completely internal, which is carried on between man and man in a State or between different parts of the same State, and which does not extend to or affect other States. Such a power would be inconvenient, and is certainly unnecessary.

Comprehensive as the word "among" is, it may be very properly restricted to that commerce which concerns more States than one. The phrase is not one which would probably have been selected to indicate the completely interior traffic of a State, because it is not an apt phrase for that purpose; and the enumeration of the particular classes of commerce to which the power was to be extended would not have been made had the intention been to extend the power to every description. The enumeration presupposes something not enumerated; and that something, if we regard the language or the subject of the sentence, must be the exclusively internal commerce of the State. The genius and character of the whole Government seem to be that its action is to be applied to all the external concerns of the nation, and to those internal concerns which affect the States generally, but not to those which are completely within a particular State, which do not affect other States, and with which it is not necessary to interfere, for the purpose of executing some of the general powers of the Government. The completely internal commerce of a State, then, may be considered as reserved for the State itself.

But, in regulating commerce with foreign nations, the power of Congress does not stop at the jurisdictional lines of the several States. It would be a very useless power if it could not pass those lines. The commerce of the United States with foreign nations is that of the whole United States. Every district has a right to participate in it. The deep streams which penetrate our country in every direction pass through the interior of almost every State in the Union, and furnish the means of exercising this right. If Congress has the power to regulate it, that power must be exercised whenever the subject exists. If it exists within the States, if a foreign voyage may commence or terminate at a port within a State then the power of Congress may be exercised within a State.

This principle is, if possible, still more clear when applied to commerce "among the several States." They either join each other, in which case they are separated by a mathematical line, or they are remote from each other, in which case other States lie between them. What is commerce "among" them, and how is it to be conducted? Can a trading expedition between two adjoining States commence and terminate outside of each? And if the trading intercourse be between two States remote from each other, must it not commence in one, terminate in the other, and probably pass through a third? Commerce among the States must of necessity be commerce with the States. In the regulation of trade with the Indian tribes, the action of the law, especially when the Constitution was made, was chiefly within a State. The power of Congress, then, whatever it may be, must be exercised within the territorial jurisdiction of the several States. The sense of the nation on this subject is unequivocally manifested by the provisions made in the laws for transporting, by land, between Baltimore and Providence, between New York and Philadelphia, and between Philadelphia and Baltimore.

We are now arrived at the inquiry, What is this power?

It is the power to regulate; that is, to prescribe the rule by which commerce is to be governed. This power, like all others vested in Congress, is complete in itself,

may be exercised to its utmost extent, and acknowledges no limitations, other than are prescribed in the Constitution. These are expressed in plain terms, and do not affect the questions which arise in this case, or which have been discussed at the bar. If, as has always been understood, the sovereignty of Congress, though limited to specified objects, is plenary as to those objects, the power over commerce with foreign nations and among the several States, is vested in Congress as absolutely as it would be in a single government, having in its constitution the same restrictions on the exercise of the power as are found in the Constitution of the United States. (pp. 193–197.)

* * * * * * *

But the inspection laws are said to be regulations of commerce, and are certainly recognized in the Constitution, as being passed in the exercise of a power remaining with the States.

That inspection laws may have a remote and considerable influence on commerce, will not be denied, but that a power to regulate commerce is the source from which the right to pass them is derived, cannot be admitted. The object of inspection laws is to improve the quality of articles produced by the labor of the country; to fit them for exportation; or, it may be, for domestic use. They act upon the subject before it becomes an article of foreign commerce, or of commerce among the States, and prepare it for that purpose. They form a portion of that immense mass of legislation which embraces everything within the territory of a State not surrendered to the General Government; all which can be most advantageously exercised by the States themselves. Inspection laws, quarantine laws, health laws of every description, as well as laws for regulating the internal commerce of a State, and those which respect turnpike roads, ferries, &c., are component parts of this mass.

No direct general power over these objects is granted to Congress, and, consequently, they remain subject to State legislation. If the legislative power of the Union can reach them it must be for national purposes—it must be where the power is expressly given for a special purpose, or is clearly incidental to some power which is expressly given. It is obvious that the Government of the Union, in the exercise of its express powers—that, for example, of regulating commerce with foreign nations and among the States—may use means that may also be employed by a State, in the exercise of its acknowledged power—that, for example, of regulating commerce within the State. If Congress license vessels to sail from one port to another in the same State the act is supposed to be necessarily incidental to the power expressly granted to Congress, and implies no claim of a direct power to regulate the purely internal commerce of a State, or to act directly on its system of police. So if a State, in passing laws on subjects acknowledged to be within its control, and with a view to those subjects shall adopt a measure of the same character with one which Congress may adopt, it does not derive its authority from the particular power which has been granted, but from some other, which remains with the State, and may be executed by the same means. All experience shows that the same measures, or measures scarcely distinguishable from each other, may flow from distinct powers, but this does not prove that the powers themselves are identical. Although the means used in their execution may sometimes approach each other so nearly as to be confounded, there are other situations in which they are sufficiently distinct to establish their individuality (pp. 203–204).

* * * * * * *

The acts of Congress, passed in 1796 and 1799 (2 U. S. L., p. 545; 3 U. S. L., p. 126), empowering and directing the officers of the General Government to conform to and assist in the execution of the quarantine and health laws of the State, proceed, it is said, upon the idea that these laws are constitutional. It is undoubtedly true that they do proceed upon that idea; and the constitutionality of such laws has never, so far as we are informed, been denied. But they do not imply an acknowledgment that a State may rightfully regulate commerce with foreign nations, or among the States, for they do not imply that such laws are an exercise of that power, or enacted with a view to it. On the contrary they are treated as quarantine and health laws, are so denominated in the acts of Congress, and are considered as flowing from the acknowledged power of a State, to provide for the health of its citizens. But, as it was apparent that some of the provisions made for this purpose, and in virtue of this power might interfere with and be affected by the laws of the United States, made for the regulation of commerce, Congress in that spirit of harmony and conciliation which ought always to characterize the conduct of governments standing in the relation which that of the Union and those of the States bear to each other, has directed its officers to aid in the execution of these laws; and has in some measure adapted its own legislation to this object by making provisions in aid of those of the States. But in making these provisions, the opinion is unequivocally manifested that Congress may control the State laws, so far as it may be necessary to control them for the regulation of commerce (pp. 205–206).

In an earlier decision than this Chief Justice Marshall lays down some principles which have a very important bearing upon this question. He said:

The government which has a right to do an act, and has imposed upon it the duty of performing that act, must, according to the dictates of reason, be allowed to select the means; and those who contend that it may not select any appropriate means, that one particular mode of effecting the object is excepted, take upon themselves the burden of establishing that exception. (17 U. S., 409.)

* * * * * * *

Take, for example, the power "to establish post-offices and post-roads." This power is executed by the single act of making the establishment. But from this has been inferred the power and duty of carrying the mail along the post-road from one post-office to another. And from this implied power has again been inferred the right to punish those who steal letters from the post-office or rob the mail. It may be said, with some plausibility, that the right to carry the mail and to punish those who rob it is not indispensably necessary to the establishment of a post-office and post-road. This right is indeed essential to the beneficial exercise of the power, but not indispensably necessary to its existence. So of the punishment of the crimes of stealing or falsifying a record or process of a court of the United States, or of perjury in such court. To punish these offenses is certainly conducive to the due administration of justice. But courts may exist and may decide the causes brought before them, though such crimes escape punishment (17 U. S., 417).

* * * * * * *

We admit, as all must admit, that the powers of the Government are limited, and that its limits are not to be transcended. But we think the sound construction of the Constitution must allow to the National Legislature that discretion with respect to the means by which the powers it confers are to be carried into execution which will enable that body to perform the high duties assigned to it in the manner most beneficial to the people. Let the end be legitimate; let it be within the scope of the Constitution; and all means which are appropriate, which are plainly adapted to that end, which are not prohibited, but consist with the letter and spirit of the Constitution, are constitutional (17 U. S., 421).

* * * * * * *

This great principle is, that the Constitution and the laws made in pursuance thereof are supreme; that they control the constitution and laws of the respective States, and cannot be controlled by them. From this, which may be almost termed an axiom, other propositions are deduced as corollaries on the truth or error of which, and on their application to this case, the cause has been supposed to depend. These are, first, that a power to create implies a power to preserve; second, that a power to destroy, if willed by a different hand, is hostile to, and incompatible with, these powers to create and preserve; third, that where this repugnancy exists, that authority which is supreme must control, not yield to that over which it is supreme. (17 U. S., 426.)

The decisions which have been quoted seem to leave no doubt that the authority of Congress extends into the interior of a State for the purpose of carrying out any measures necessary for the regulation of commerce, but it may be asked, Does this include all portions of a State, or only such as are on through lines of communication? Pomeroy, in his well-known work on the Constitution, says:

Commerce includes means, instruments, and places by and in which intercourse and traffic are carried on; and, further still, comprehends the act of carrying them on at these places and by and with these means.

Lakes, rivers, canals, roads, turnpikes, and railways are channels for intercourse and traffic, and commerce carried by these if foreign or inter-State is as much a subject of regulation by Congress as that transacted over the highway of nations (p. 244).

If this definition of commerce is correct, then there are few places in the country where the power of Congress would not reach for its regulation, since in these days the most obscure lanes in the interior of our States are traversed by animals on their way from one State to another.

It appears, however, from the following decision of Justice Story that the power of Congress extends beyond lines of communication, and takes in such subjects, at a distance from them, as interferes with, obstructs, or prevents commerce. He says:

But we are of opinion that under the clause of the Constitution giving power to Congress "to regulate commerce with foreign nations and among the several States,"

Congress possessed the power to punish offenses of the sort which are enumerated in the ninth section of the act of 1825, now under consideration. The power to regulate commerce includes the power to regulate navigation, as connected with the commerce with foreign nations, and among the States. It was so held and decided by this court, after the most deliberate consideration, in the case of Gibbons *v.* Ogden (9 Wheat., 189–198). It does not stop at the mere boundary line of a State; nor is it confined to acts done on the water, or in the necessary course of the navigation thereof. It extends to such acts done on land which interfere with, obstruct, or prevent the due exercise of the power to regulate commerce and navigation with foreign nations, and among the States. Any offense which thus interferes with, obstructs, or prevents such commerce and navigation, though done on land, may be punished by Congress, under its general authority to make all laws necessary and proper to execute their delegated constitutional powers. No one can doubt that the various offenses enumerated in the ninth section of the act are all of a nature which tend essentially to obstruct, prevent, or destroy the due operations of commerce and navigation with foreign nations and among the several States. Congress has, in a great variety of cases, acted upon this interpretation of the Constitution from the earliest period after the Constitution, as will be abundantly seen by the punishment of certain offenses on land, connected with piracies and felonies on the high seas, in the act of 1790 (ch. 36, sec. 10 and sec. 11), and in the acts for regulation of commerce and navigation, and for the collection of the revenue, passed from time to time; in which many of the penalties, forfeitures, and offenses provided for are such as are, or may be, done on land; and yet which arise from the power to regulate commerce and navigation, and to levy and collect duties. The ship registry act of 1792 (ch. 45), the act of 1798 (ch. 52), for the enrollment and licensing of vessels in the coasting trade and fisheries; the act of 1790 (ch. 102), for the regulation and government of seamen in the merchant service; and the revenue collection act, from the act of 1789 (ch. 5), to that of 1799 (ch. 128), afford many pointed illustrations. We do not hesitate, therefore, to say that in our judgment the present section is perfectly within the constitutional authority of Congress to enact, although the offense provided for may have been committed on land and above high water mark.—(U. S. *v.* Coombs, 37 U. S., p. 78.)

Applying this to our case, it would seem that wherever pleuro-pneumonia exists, and by such existence constitutes an interference with, obstruction or danger to inter-State or foreign commerce, there it can be reached by the power of the nation and exterminated.

STATE POLICE POWERS.

It has been suggested that such action on the part of the Federal Government would be an infringement upon the reserved police powers of the several States—powers which have been recognized in the decisions of the Supreme Court since the formation of our Government. That the States possess such police powers for the protection of health and property within their territory is not contested; but here we have a case where a subject may be regulated for national purposes and under the authority for the regulation of commerce, or it may be regulated for local purposes under the police powers of the States, providing such regulation can be effected without placing restrictions on inter-State or foreign commerce. As a matter of fact it has not been regulated satisfactorily or effectually by the individual States for two reasons; first, owing to the difficulty of controlling such a disease without restricting inter-State commerce, and secondly, because the losses in the affected States do not so greatly exceed the cost of stamping out the plague and the inconvenience that would result from this work, as to make the measure a very desirable one from a local point of view. All of the States infected with pleuro-pneumonia now have certain repressive measures in force for holding such maladies in check and preventing disastrous losses from them. As a rule the country districts are preserved from excessive losses, but the large dairies about the cities lose heavily and keep up the infection year after year. But as it operates upon each of these substantially the same, its effects are taken into account as increasing the cost of production, and as the price

of the article produced (milk) is regulated locally by the demand and supply, there are not the local reasons for exterminating such a disease that one would at first thought suppose. To exterminate the disease completely in Maryland, in New Jersey, or in New York would require what for a single State would be a large expenditure of money, and would also necessitate local quarantine regulations that would not be popular in the districts where enforced. It seems very plain, therefore, that the reason why pleuro-pneumonia has not been extirpated by the individual States, under the reserved police powers of the States, is that such States have not considered that their local inerests would warrant such a measure.

Looked at from a national point of view, however, it is very desirable to have this plague exterminated at once. Not only is our enormous investment of $1,200,000,000 in cattle menaced, but we have now on our national commerce, foreign and domestic, restrictions which cost us every year several times as much as would be required to exterminate the disease once and forever.

The question at issue may, consequently, be stated in this form: Given a subject to be regulated which may be reached under the police powers of the States, but which is not effectually regulated under that power, and which may at the same time be reached under the national authority to regulate commerce, should the fact that it can be reached under the State police power prevent its regulation by Congress, no matter how great the interest at stake?

In the decision of Chief Justice Marshall, already quoted (Gibbons *v.* Ogden, 22 U. S., 205–206), it was said that although the acts of Congress of 1796 and 1799 directed the officers of the General Government to conform to and assist in the execution of the quarantine and health laws of a State, the opinion is unequivocally manifested that Congress may control the State laws, so far as it may be necessary to control them for the regulation of commerce. In the same decision he goes on to say:

> In argument, however, it has been contended that if a law, passed by a State in the exercise of its acknowledged sovereignty, comes into conflict with a law passed by Congress in pursuance of the Constitution, they affect the subject, and each other, like equal opposing powers.
>
> But the framers of our Constitution foresaw this state of things, and provided for it by declaring the supremacy not only of itself but of the laws made in pursuance of it. The nullity of any act, inconsistent with the Constitution, is produced by the declaration that the Constitution is the supreme law.

In Cooley's Constitutional Limitations it is stated that—

> It is not doubted that Congress has the power to go beyond the general regulations of commerce which it is accustomed to establish, and descend to the most minute directions, if it shall be deemed advisable, and that to whatever extent ground shall be covered by those directions, the exercise of State power is excluded. Congress may establish police regulations, as well as the States, confining their operation to the subjects over which it is given control by the Constitution (p. 731).

These points seems to be so well settled, and have been reaffirmed so many times, that it is not deemed necessary to go into the subject at greater length in this report.

APPROPRIATION OF PROPERTY UNDER THE RIGHT OF EMINENT DOMAIN.

It being conceded by all, that to stamp out pleuro-pneumonia and similar diseases, a necessary measure is to take possession of affected animals and slaughter them, the question has been raised as to whether the Federal Government has the authority to enforce such a regulation

within the territorial limits of the States. As bearing directly upon this point the following language is quoted from the decision of the Supreme Court in the case of Kohl *et al. v.* United States (91 U. S., 367–379):

It has not been seriously contended during the argument, that the United States Government is without power to appropriate lands or other property within the States for its own uses, and to enable it to perform its proper functions; such an authority is essential to its independent existence and perpetuity. These cannot be preserved if the obstinacy of a private person, or if any other authority, can prevent the acquisition of the means or instruments by which alone governmental functions can be performed. The powers vested by the Constitution in the General Government demand for their exercise the acquisition of land in all the States. * * * If the right to acquire property for such uses may be made a barren right by the unwillingness of property-holders to sell, or by the action of a State prohibiting a sale to the Federal Government, the constitutional grants of power may be rendered nugatory, and the Government is dependent for its practical existence upon the will of a State or even upon that of a private citizen. This cannot be. No one doubts the existence in the State government of the right of eminent domain—a right distinct from and paramount to the right of ultimate ownership. It grows out of the necessities of their being, not out of the tenure by which lands are held. It may be exercised, though the lands are not held by grant from the Government, either mediately or immediately, and independent of the consideration whether they would escheat to the Government in case of failure of heirs. The right is the offspring of political necessity; and it is inseparable from sovereignty, unless denied to it by its fundamental law. * * * But it is no more necessary for the exercise of the powers of a State government than it is for the conceded powers of the Federal Government. That Government is as sovereign within its sphere as the States are within theirs. True, its sphere is limited. Certain subjects only are committed to it; but its power over these subjects is as full and complete as is the power of the States over the subjects to which their sovereignty extends. The power is not changed by its transfer to another holder.

But if the right of eminent domain exists in the Federal Government, it is a right which may be exercised within the States, so far as is necessary to the enjoyment of the powers conferred upon it by the Constitution. In Ableman *v.* Booth (21 How., 523), Chief Justice Taney described in plain language the complex nature of our Government, and the existence of two distinct and separate sovereignties within the same territorial space, each of them restricted in its powers, and each, within its sphere of action, prescribed by the Constitution of the United States, independent of the other. Neither is under the necessity of applying to the other for permission to exercise its lawful powers. Within its own sphere it may employ all the agencies for exerting them which are appropriate or necessary, and which are not forbidden by the law of its being. When the power to establish post-offices and to create courts within the State was conferred upon the Federal Government, included in it was authority to obtain sites for such offices and for court-houses, and to obtain them by such means as were known and appropriate. The right of eminent domain was one of those means well-known when the Constitution was adopted, and employed to obtain lands for public uses. Its existence, therefore, in the grantee of that power ought not to be questioned. The Constitution itself contains an implied recognition of it beyond what may justly be implied from the express grants. The fifth amendment contains a provision that private property shall not be taken for public use without just compensation. What is that but an implied assertion that, on making just compensation, it may be taken?

That this right of eminent domain applies to all property, real or personal, where there is a necessity for its appropriation for public use, appears from the language used in 6 Howard, 532, 537, 546. In this case Justice McLean said: "But no one doubts the power of the State to take a banking house for public use, or any other real or personal property owned by the bank."

THE QUESTION OF POLICY.

As to the power of Congress to make necessary laws for the extirpation of dangerous contagious diseases of animals, there would seem to be little doubt from the above-mentioned decisions. It is certain that the General Government can enforce measures for this purpose much more effectually that can be done by the States acting separately. The States do not act in concert; many of them have no laws, and their

powers are restricted by that clause of the United States Constitution giving to Congress the exclusive power to regulate commerce among the States.

The importance and magnitude of the stock interests were so clearly set forth in the address which you delivered at Chicago, in November, 1885, that I take the liberty of making the following extracts:

The history of the development and of the present wonderful magnitude of the cattle industry creates increased interest and fresh astonishment the more it is studied and the more we trace its relations to the comfort and prosperity of our people.

When the first accurate statistics of the cattle in this country were collected in 1850 it was found that we had in round numbers about 17,778,000, and, in 1860, 25,620,000; in 1870 this number had been reduced to 23,820,000; in 1880 there were 35,925,000, while in 1885 there are not far from 45,000,000. This last number is so great that it is difficult for the human mind to grasp its significance or to appreciate the vast accumulation of cattle which it represents, which have been gathered together and reared by the industry and enterprise of our people.

If a solid column should be formed 12 animals deep, one end resting at New York City, its center encircling San Francisco, and its other arm reaching back to Boston, such a column would contain about the number which now forms the basis, the capital stock, so to speak, of the cattle industry of the United States. The value of these animals is not less than $1,200,000,000.

While the cattle industry has reached this remarkable development, and those engaged in it have accumulated this fabulous aggregate of wealth, you, who represent the industry here to-day, find yourselves confronted by problems which have increased in seriousness even more rapidly than your herds have multiplied upon their luxuriant pastures. Insidious cattle plagues exist in the country, and eternal vigilance is required to keep them from sweeping through your herds as a fire sweeps the dry grass from the prairie. To protect from these diseases, State regulations and State restrictions upon the movement of cattle have been formulated, which during the past year have been the cause of the most serious disturbance and loss to those engaged in this industry in a considerable number of States. Those who are raising cattle upon the arid plains of the West are becoming uneasy in regard to the security of their ranges. Our people are impatient under the restrictions upon our foreign trade. And so, in whatever direction we turn, there are important questions to be met which will doubtless tax your talent, energy, and perseverance to the utmost, and require wise and united action to secure a satisfactory solution of them.

But it is not the cattle interest alone that has to meet these questions. When we attempt to consider the importance of the industries affected by them, we find that the various branches of the animal industry are so linked together that all are more or less affected. Contagious diseases are not confined to cattle alone. The swine industry is at this time perhaps the very greatest sufferer from them, and from all parts of the country comes up the cry for relief. Nor are these restrictions upon our foreign trade confined to cattle alone. Our sheep and swine are also slaughtered on the English docks with an even more destructive effect upon the traffic. The prohibition of our pork is only too well known; and the interest in a settlement of the range questions is shared by the breeders of cattle, horses, and sheep. The questions which a national convention of cattlemen must consider are, consequently, broad questions, which involve great principles, and are of national importance from various standpoints. And with you are directly interested the breeders and owners of the 13,000,000 of horses and mules, of the 50,000,000 of sheep, and of the 45,000,000 of swine. This great animal industry may be said, therefore, to be united in interest, and by embracing the horses, and cattle, and sheep, and swine, we have a capital represented of $2,500,000,000.

* * * * * *

In the thirteen Southern States, beginning with Virginia and ending with Texas, and including Kentucky, Tennessee, and Arkansas, all the assessed real estate and personal property, as returned in the census of 1880, did not equal the present estimated value of our animal industry. And all the New England States combined, with the single exception of New Hampshire, did not have enough assessed valuation in 1880 to equal the present value of our domestic animals.

You all know what an enormous amount of cotton is produced in the Southern States; and those who have been in the South when this crop was being marketed, and have seen the bales piled up on every wagon that was entering the towns, who have seen the warehouses overflowing, the railway stations and platforms overwhelmed, and the trains loaded down with this staple, can realize more plainly than I can picture the magnitude of the cotton crop. Still, in 1880, our railroads carried two and one-half times as many tons of live stock as of cotton. Why, gentlemen, the product of our animal industry in 1884, including meat, and labor, and dairy products, and

wool, and lard, and tallow, and hides, &c., was four times as much as the gross earnings of all the railroad companies in the United States.

The animal industry is not only great in itself, but it is great in the assistance which it renders to other productive industries. Take the greatest crop produced in this country—the corn crop—and 72 per cent. of that is dependent upon our animal industry for a market. Take the great hay crop, and there is no other way to utilize it; and the oat crop, which mostly goes for animal food. The value of these three crops, which are marketed as animal food, of itself reaches a thousand millions of dollars a year.

Now, what is the effect of a contagious disease which destroys a considerable portion of the animals depended on to market these crops, and, consequently, makes the production of meat more difficult? Evidently it will have a double effect. It will increase the price of meat or other animal products without benefiting any one, because it will be more expensive to produce it. It will also reduce the value of these enormous crops I have mentioned, because they cannot be fed to the same advantage; that is, such a disease injuriously affects the feeder of the meat-producing animal, the grower of the hay and grain crops, and the consumer of the meat or other product, and in one or the other of these classes every person in the country is included.—(Address of Hon. Norman J. Colman before the Third National Convention of Stockmen, 1885, pp. 3, 4, 5.)

RELATION OF CONTAGIOUS DISEASES TO COMMERCE.

I will also take the liberty of quoting the reference which was made in the address at the Third Annual Convention of Stockmen by the Chief of the Bureau of Animal Industry in regard to the relation of contagious diseases to commerce, and a condensed statement showing the magnitude of the interests involved. It was said:

It is by this commerce that such diseases are carried. In olden times the chief agents for the dissemination of contagion were the contending armies which marched and countermarched through nearly all the countries of Europe, gathering the seeds of these dreaded plagues in the most obscure districts, multiplying them by providing susceptible subjects among the animals driven along to furnish supplies, and scattering them broadcast along the line of march. To-day, from the wonderful revolution in transportation facilities which has resulted from the application of steam power, contagious diseases may be distributed more rapidly through the ordinary channels of commerce than was formerly possible during the most extensive wars. The mighty steamships that plow their way across the Atlantic in a few days bring animals which may have been exposed to contagion in Europe, and yet will show no sign of disease for days or weeks after they are landed on our shores. And once a disease has gained a lodgment here, how silently and rapidly may it be carried from the East to the West, from the North to the South, by the swift-rolling cars of a thousand trains.

This distribution of diseases by commerce, as it is at present conducted, and the direct losses from their ravages, are but a part of the losses which our country is called upon to bear. The restrictions upon our foreign commerce, which are a consequence of the existence of communicable diseases in this country, have become familiar to all, but the intolerable nuisance of State and Territorial restrictions is just beginning to make itself felt, and it may be safely asserted that when forty different States and Territories have forty different sets of laws and regulations governing the movement of live stock, the losses from these restrictions on commerce will be forty times worse than the most vivid imagination can portray them at this time. Try for a moment to realize the amount of legal lore and the diplomacy that would be required to successfully carry a calf from New York to San Francisco under such circumstances. But woe to the man who tried to accomplish this feat without first securing a proper history of the animal, duly certified to by sworn evidence. For him ten quarantine stations would stand ready with open gates to take him in for three months each, or in the aggregate two years and a half.

MAGNITUDE OF THE INDUSTRIES AFFECTED.

The national importance of the two chief industries involved may be seen by a condensed statement, as follows:

Cattle industry, 45,000,000	$1,200,000,000
Annual production, 7,000,000 head	350,000,000
Become a part of inter-State commerce, 5,000,000 head	250,000,000

Veals, 3,000,000	$15,000,000
Export trade, the greater part of which is under restrictions, 182,000 head	13,000,000
Total exports of cattle and cattle products	50,867,000
The swine industry, annual product, 29,000,000 head	340,000,000
Value of the product which goes into inter-State commerce	243,000,000
Annual product exported	92,000,000

Upon figures like these it is unnecessary to comment. If industries and a commerce of such dimensions are not worthy of protection and encouragement, then there surely must be few subjects left of sufficient importance to engage the legislative mind.

I have lately secured some figures which demonstrate very conclusively the effect of restrictions upon our export trade. In 1879 the same restrictions were placed upon the sheep and pigs, which we export alive to Great Britain that were placed upon our cattle, viz., it was ordered that they should all be slaughtered at the place of landing. The effect on the sheep trade was as follows: In 1879 we exported 108,000; in 1880, 80,000; in 1881, 60,000; in 1882, 46,000; in 1884, 32,000. The effect on the hog trade was equally disastrous. In 1879 we exported 25,000; in 1880, 10,000; in 1882, 1,000; in 1884, 4 solitary animals.

The cattle industry is one of our greatest industries, and upon its prosperity depends indirectly to a considerable extent the welfare of all the different varieties of business carried on in this country, and it cannot meet with loss and disaster without affecting the millionaire in his palace and the mendicant who stands at the street corner and solicits alms.

There is neither a State nor an important city in the Union where there are not people who have their savings invested in the cattle which roam over the Western ranges. The business of banks and railroads and telegraph companies is greatly augmented by the traffic in cattle and cattle products, while the agriculturist depends upon the cattle industry to furnish a market for much of his hay and grain. A serious check to the cattle-raiser means immediate loss of business to railroads and banks, lower prices for hay and grain, and, sooner or later, depression in all kinds of business.

The traffic in animals between the various parts of the country is enormous. The breeders of thoroughbred cattle—*i. e.*, of Jerseys, and Guernseys, and Shorthorns, and Holsteins, and Ayrshires, and Angus, &c.—in the East and in the Mississippi Valley, are continually purchasing, selling, and exchanging animals with each other, and depend largely for a market for their surplus upon the sections still further west. The number and value of the bulls alone which are annually sent from the five States of Kentucky, Tennessee, Missouri, Iowa, and Illinois to the range country, would certainly be astonishing if the accurate figures could be obtained. The importance of this branch of commerce has been felt in Missouri and Kentucky since the outbreaks of pleuro-pneumonia have so nearly destroyed their markets. Not only has the commerce of these States with other sections of the Union been interrupted for the time being, but the value of the animals which are owned there has greatly depreciated. The following extract from an editorial in a leading stock journal serves to illustrate this statement:

The sale of the Jackson County Shorthorns here last week was the greatest sacrifice ever made of thoroughbred cattle in this section. The offerings were the best made here by the association, and an average of $125 to $130 would have been considered low. But just think of only an average of $83! While this is most discouraging, it was not altogether unexpected. The excitement and scare over pleuro-pneumonia in Missouri had blighted the cattle interest, and breeders feared disaster, but hoped for better things.

* * * * * * *

Taking the above decline in price, as compared with last spring's sales, and the losses made in Central Missouri at recent sales there, as a basis of calculation, our cattle have depreciated in value fully 25 per cent., which, on the 2,009,647 cattle in the State, assessed at $50,000,000, represents a shrinkage of $12,271,843.—(*Kansas City Live-Stock Record, May* 21, 1885.)

A prominent Kentucky cattle-raiser contributed the following letter to the columns of the *National Live-Stock Journal* in June last, which shows that an equally bad condition of affairs existed in that State from the same cause:

To the editor of the Journal:

With the desire to throw a legal quarantine around the Cynthiana herd of Jerseys, in hopes it might be the means of inducing the States that have quarantined against Kentucky cattle to raise the same, a meeting of the representative cattlemen of this State was held in Frankfort on the 3d instant. Competent committees were appointed to look into the matter thoroughly, with power to act, to secure the co-operation of our governor, and to confer with the owners of the infected herd. It was thought at one time that 10 or 12 cattle, owned by a man whose premises lay between the barn and pasture of the infected herd, had caught the disease, but this is now denied. Therefore, the market and sale of the entire breeding and feeding stock of Kentucky cattle is totally paralyzed on account of one herd of cattle, half of whose number has been shipped to Texas and Tennessee, because we have no legal quarantine of the same. The interest in grade cattle alone in Kentucky amounts to more than all the Shorthorns, Jerseys, Holsteins, and other breeds of pure-bred cattle together; yet with Iowa, Nebraska, and Kansas, to say nothing of other Western States, in quarantine they are entirely cut off from all market except the butcher's block. The cheaper classes of all the pure breeds are in the same condition. Are not the grade cattle of Illinois and Ohio similarly affected? When we consider that these grade calves are usually worth from $30 to $35 per head at weaning time, and now on account of the different State quarantines, are not worth over from $15 to $20 per head, and then add a depreciation of 50 cents on the dollar for the pure breeds, we will have some idea of the immense loss in dollars and cents for the want of a thorough and efficient national law governing the whole matter of pleuro-pneumonia, instead of each State acting separately in the same matter. The sanitary laws of Kentucky as applied to people are almost unlimited, and I am very much in hopes before two weeks expire that some way will be found to quarantine and thoroughly isolate the Cynthiana herd, so that the cattle business of Kentucky may assume its ordinary relations with all the States; for the way the matter stands now Kentucky grade calves even have depreciated enough in price to have paid for every suspected case of pleuro-pneumonia west of the Alleghanies.

T C. ANDERSON.

While this loss of trade and depreciation of property was partly the result of the general suspicion felt by buyers in regard to the cattle of these States, it was also largely due to the quarantine restrictions and other regulations of trade which many States considered necessary in the absence of a national law by which the outbreaks of disease could be extirpated or even safely quarantined. Such local regulations were made by Illinois, Iowa, Nebraska, Kansas, Colorado, Wyoming, Montana, and other States. Other sections of the country, such as Indiana, Ohio, Pennsylvania, Connecticut, New York, New Jersey, Delaware, Maryland, and Virginia, have had their commerce restricted, and in some cases their cattle entirely prohibited from entering other States because of the real or suspected existence of pleuro-pneumonia within their borders.

Such numerous laws and regulations of commerce are not only oppressive, but they are becomming intolerable in a country bound together with such numerous transportation lines, and where these, combined with telegraph and postal facilities, have annihilated space to such an extent that the most distant sections of the nation can now exchange commodities with greater facility than was formerly possible between the different parts of our smallest States.

The trade in cattle and cattle products between the different States and Territories of the Union has reached an enormous development. According to recent estimates there were, in 1884, 300,000 head of young cattle, driven from Texas to the Northern ranges, and taken to the same ranges from other States 155,000 head, in all 455,000 animals, valued at

nine and a quarter millions of dollars. In the first ten months of 1884 44,445 calves were received at Chicago, and 25,559 were shipped away from there. Many of these were gathered up in Eastern States and were on their way to the different farms and ranches of the West.

The cattle trade at the principal markets of the United States for 1883 is shown by the following table, which gives the number of animals received:

Kansas City	460,780
Saint Louis	405,090
Chicago	1,878,944
Cincinnati	218,425
Buffalo	603,755
New York	872,472
Philadelphia	236,050
Baltimore	94,349
Total	4,769,865

Traffic in principal cattle products, 1883.

Dressed beef received in Eastern cities	pounds	291,742,000
Butter product of nation	do	771,250,287
Cheese	do	27,272,489
Milk sold or sent to factories	gallons	530,129,755

These figures show the great volume of traffic among the States which largely depends for its continuance and prosperity upon uniform regulations of commerce, and upon the national control of contagious diseases according to methods pointed out in the preceding sections, which, if adopted at once, would place few, if any, restrictions upon the perfect freedom of this inter-State commerce. Such regulations are designed to facilitate commerce, to relieve it from its present restrictions and to protect it from its greatest danger—the contagious animal diseases, and especially pleuro-pneumonia. They are sufficient to accomplish this, but the present State restrictions, while causing extraordinary hardships and loss, will still prove insufficient, because, while pleuro-pneumonia is allowed to remain practically unchecked in comparatively large sections of the country, no regulations short of the entire suspension of inter-State cattle traffic can guard against it.

I have endeavored to give above some idea of the effect of the continued existence and spread of pleuro-pneumonia in the United States upon our internal commerce and the extent of the trade which is directly affected by it. If we will now turn to our foreign commerce we will find this detrimental influence equally manifest.

Since March 4, 1879, cattle from the United States exported to Great Britain have not been allowed to go into the interior of the country, but have been slaughtered at the port of landing. It is estimated by good authorities who have investigated this subject, that, owing to this restriction upon the introduction of our cattle, each animal brings from $10 to $15 less than it would if it had been shipped from Canada, and for that reason secured free admittance. The number of cattle exported to Great Britain for each year from 1879 to 1884, inclusive, is as follows:

1879	71,794
1880	125,517
1881	134,061
1882	68,008
1883	76,091
1884	169,257
1885	123,828
Total for seven years	768,556

Estimating the loss on these animals at the minimum of $10 each, and we have an aggregate of $7,685,560, which represents the depreciation in the value of the live cattle exported to Great Britain as a consequence of the restrictions resulting from the presence of pleuro-pneumonia within the territory of the United States. As Great Britain has placed the same restrictions upon the importation of cattle from other countries where this disease prevails, but allows the free entrance of such animals from countries that are not infected, there can be but little doubt that, as soon as we can declare the complete extirpation of the contagion, the restrictions on our trade will be removed.

The shipment of store cattle, that is lean stock, to be fattened in Great Britain, is entirely prohibited by a regulation which makes it necessary to slaughter at the port of landing. To what extent the trade might be developed if this burden were removed it is difficult to say; but since Mr. Moreton Frewen has so clearly shown that an animal worth $100 in England could be shipped there from this country and put upon the market at a cost not exceeding $75, it becomes very certain that a large trade might be secured. The replies which have been made to Mr. Frewen's arguments, though they have been given in very positive language, are not satisfactory. It is not sufficient to say that a fattened steer or dressed beef can be sent to England much cheaper than a lean steer and the food to fatten him with can be transported. As Mr. Frewen has shown, grain can be carried much cheaper than dressed beef, which must go in refrigerator compartments and is very liable to damage. Even live cattle do not always arrive in condition to be immediately slaughtered. They may be bruised and feverish, or the market may be such that it would be better to hold them for a few weeks. Again, both dressed beef and live cattle shrink very noticeably in weight from the effects of so long a trip.

The great reason, however, in favor of a trade in store cattle is the absolute necessity to English agriculture of feeding cattle upon their farms. The English farmer must have manure, and to obtain it he has been raising and feeding steers when there was no profit in the operation, and he must continue to feed cattle even if the provender must be imported. Admitting this to be the actual condition of affairs, it is easily seen that, if a steer can be reared to the age of two and a half or three years in the United States and then taken to England and sold for $25 or $30 less than he would have cost if reared in England, there would be a profit in feeding American steers when there would be a loss in feeding those bred in England. The question of the breed and form is not to be taken into consideration, because we can and do breed just as good steers as can be produced anywhere in the world, and by proper selection we can supply the demand for any kind of an animal.

The benefit of having free trading intercourse with a great consuming nation like England cannot be measured entirely by the volume of the traffic. By relieving our markets of a slight surplus, the tone of the market would be completely changed; we should be saved from the periodical depression of prices which works so much injury and discouragement, and every cattle-raiser in the country would feel the beneficial effects.

The present is a remarkably favorable time to inaugurate this new branch of trade. Cattle are selling perhaps lower than they ever will again in this country, and consequently the difference in value between stock here and in England is such as to offer greater inducements to exporters. A trade once established would undoubtedly be continued as

long as there was any profit in it, and long after the margin of profit had passed the point where there would no longer be sufficient encouragement to attract capital into a new and untried enterprise. It is of importance, therefore, that the obstacle to this traffic should be removed as early as possible.

The following table shows the export trade in cattle and cattle products, which would be greatly reduced or entirely destroyed by the general distribution of pleuro-pneumonia in the United States. The figures are for 1884:

Articles.	Quantity.	Value.
Live cattle ..... No..	190, 518	$17, 855, 495
Fresh beef ..... pounds..	120, 784, 064	11, 987, 331
Cured beef ..... do....	43, 021, 074	3, 270, 033
Canned beef	.....	3, 173, 767
Tallow ..... pounds..	63, 091, 103	4, 793, 475
Butter ..... do....	20, 627, 374	3, 750, 771
Cheese ..... do....	112, 869, 575	11, 663, 713
Milk	.....	203, 008
Total value	.....	56, 697, 493

RESOLUTIONS PASSED BY LEADING ORGANIZATIONS OF STOCKMEN IN REGARD TO LEGISLATION ON DISEASES OF ANIMALS.

The following resolutions, asking for national legislation for the suppression of contagious animal diseases, have been passed by conventions of leading stock organizations of the country:

Second Annual Convention of Stockmen, Chicago, November 13 and 14, 1884.

Resolved, That the efforts of the Bureau of Animal Industry in defining and locating the present outbreak of pleuro-pneumonia, and warning the public of the source of the same, merit our thanks and recognition; that we believe that the Bureau, as organized and directed by the Commissioner of Agriculture, has performed its duties to the cattle interests as fully as permitted by the law under which it acts; that the ability and energy of Professor Salmon command our marked respect and approval, and we favor such legislation as will give to the Bureau the wider sphere of usefulness which we believe the true interests of stock-breeders demand it should occupy.

First National Convention of Cattlemen, Saint Louis, November 17 to 22, 1884.

Resolved, That the suppression of pleuro-pneumonia, foot-and-mouth disease, and rinderpest, which have been or may be introduced into this country, is of such vital importance to the cattle industry, and through it indirectly to every person in the United States, that it should be considered one of those great national questions which demand the immediate and careful consideration of Congress.

And be it further resolved, That the act establishing a Bureau of Animal Industry should be so amended as to enable the Commissioner of Agriculture to co-operate with State authorities for preventing the spread of and for exterminating the above-named diseases of cattle in the United States of America, and that the expenses incurred in this work should be met by an appropriation from the national Treasury.

Convention of the farmers of Maryland, held in Baltimore, February 24 and 25, 1885.

Mr. Seth, from the Improved Live-Stock Breeders' Association, submitted the following, which was adopted:

Whereas one of the chief purposes of the Government is to guarantee to the individual the peaceful acquisition, possession, and enjoyment of property, which guarantee is the consideration for the payment of taxes;

And whereas in this nation of farmers, domesticated animals constitute a very large part of our personal property, the value of which is much lessened, and its very ex-

istence threatened by the prevalence of contagious diseases, many of which diseases have been imported from abroad;

And whereas owing to the means of rapid transportation which have grown up since the adoption of our national Constitution, which presents an order of things not contemplated by the founders thereof, the danger of the spread of contagion is greatly increased;

And whereas uniform State action is impracticable, even if such action could be obtained, and we are and must remain wholly without proper protection, except through national legislation and the co-operation of State and national agencies: Therefore,

Resolved, That it is the imperative duty of our national Government, by proper legislation, to provide ways and means for the immediate stamping out of those contagious diseases, at least, which have been imported and which have gained a foothold here through its own want of care.

Resolved, That in the opinion of this convention that clause of the Constitution which was found broad enough to authorize national pecuniary aid to the State boards of health for the extermination of yellow fever and other contagious human diseases, is broad enough to authorize pecuniary aid in the stamping out of contagious animal diseases.

Resolved, That if no such power should be found in the Constitution as it at present exists, that the people of this country, through their proper legislative assemblies, should be given the opportunity to say whether such power should not be so delegated.

Resolved, That this nation of farmers who have been so heavily taxed for years for the support and "protection" of other industries, have a right to demand the return of the small part of the large surplus revenues which may be required to effectually rid the country of contagious animal diseases.

Resolved, That in this, as in all other matters affecting the agricultural classes, we feel the need of intelligent but persistent co-operation, and therefore respectfully urge on similar assemblies of the agriculturists of our sister States to express their opinions on this most vital subject, in terms whose meaning cannot be misunderstood.

And resolved, That copies of these resolutions be sent to our Senators and Representatives in Congress, and that each association represented in this convention be requested to bring this matter before their respective memberships, and to diligently seek to cultivate a public sentiment in favor thereof.

North Texas Cattle Raisers' Association, Sherman, Tex., March 10, 1885.

The following resolutions were adopted:

Resolved, That owing to the fact that Kansas and other States north and west of us have enacted quarantine laws which practically prevent Texas cattle from being driven through or into such States on account of what they allege to be splenic fever in Texas cattle, the effect of which is to make the market, for a large part of the marketable cattle of Texas inaccessible,—we therefore request our State legislature, now in session, to pass a law authorizing the appointment of a sanitary Board and a State veterinarian, to be composed of scientific men, whose duties it shall be to investigate and report all of the facts and conditions, causes and effects of what is alleged to be splenic fever and other diseases of live stock, and to ascertain and suggest such a remedy for its extinction as they may think best, together with such other duties and powers as the legislature may confer upon them.

Resolved, That all laws for the purpose of quarantining, and regulating, driving or shipment of cattle or other stock, from one State to another, should be uniform and enacted and enforced by the General Government, and we do most respectfully request the Congress of the United States to enact all legislation that may be necessary for promotion and protection of the trade and handling of live stock between the different States and Territories of the Union.

These resolutions were also indorsed at a meeting of the executive committee of the Concho and Colorado Cattle Association.

Montana Stock Growers' Association, Helena, August 27, 1885.

Resolved, That the Montana Stock Growers' Association in convention assembled, recognizing the great benefits, both present and prospective, to flow from labors of the national Bureau, known as the National Bureau of Animal Industry, hereby approve of the work already done, and ask Congress to pass such additional legislation as will enable the Bureau to use the necessary funds to slaughter and pay for all cattle infected with contagious diseases as they may be found within the borders of the United States.

Meeting of veterinarians and live-stock sanitary boards, Chicago, Ill., November 18, 1885.

Resolved, That this body heartily indorses the amendments to the animal industry bill proposed by Dr. Salmon in his paper read before the cattle convention on November 17, and we sincerely hope Congress will, at its next session, pass the amendments there pointed out.

Mr. Shields, from the committee on quarantine, &c., reported as follows:

Your committee on quarantine, rules, regulations, transportation, &c., beg leave to report the following:

Resolved, That the necessary quarantine of animals afflicted with, or which have been exposed to, contagious diseases, be enforced by the national Government, and the transportation of susceptible animals from and into infected districts be controlled by the same authority; that the various States be recommended to adopt uniform rules and regulations governing the admission of domestic animals into their borders until such laws are enforced, and that the present system of quarantining imported domestic animals be revised, and be made to include sheep and swine.

Mr. Brush, of Colorado, introduced the following, which was adopted:

Whereas there has been created by law a national Bureau of Animal Industry, the objects of which are to aid in the protection of domestic animals from the ravages of infectious diseases, and the dissemination of information to the people; and

Whereas under the able direction of Dr. Salmon as Chief of the Bureau, the work done has been partially successful in preventing the spread of disease, and in giving out such information as will tend to the higher education of the stock-growers of the whole country; now

Therefore, we, the veterinarians and members of the sanitary commissions here assembled, hereby express our great satisfaction at the above-mentioned results, and hope that the good work may go on under a law to be passed by Congress, giving wider scope and greater powers to the Bureau. The present law is imperfect, but the results under it give promise of untold good to flow from the enactment of a law as above suggested.

Third Annual Convention of Stockmen, Chicago, November 17 *and* 18, 1885.

Whereas the food supply of the nation is its first and chief concern; and

Whereas both the food supply and the extensive commerce incident thereto, of the American people, are now seriously endangered by the existence in different parts of the country of actively contagious cattle diseases, proven such beyond reasonable doubt by both practical and scientific observation; and

Whereas the grave loss and damage thus existing strike not only at the large investment and interests of the cattle-grower, but equally at the daily food of every consumer in the land; and

Whereas experience has demonstrated that such disease can be efficiently dealt with and destroyed by such adequate powers as can be created and maintained by national legislation and authority only; therefore, it is by the Third Annual Convention of the National Cattle Growers' Association at Chicago, and comprising representation from the several States and Territories—

Resolved, That, recognizing the need of means to the ends aimed at, a committee of five, to be known as a finance committee, and appointed by the chair, is hereby empowered and directed to solicit and receive such contributions of funds as may be needed to defray the expense of setting on foot proper measures to secure the legislation required, said committee to report to the executive committee of the National Cattle Growers' Association of America, by whose advice and direction the expenditures shall be made.

Resolved, That this convention strongly recommends to the National Cattle Growers' Association the appointment by that body of a committee to organize and prosecute methods whereby Congressional constituencies shall be induced to urge upon their Representatives in Congress their active interest in and support of the required legislation.

Resolved, That this convention recommends to the National Cattle Growers' Association the appointment of a committee charged with the duty of giving to the country through the newspaper press authentic statements as to cattle disease and the cattle industry, and of invoking the aid of this powerful agent in the correction of the present popular misconceptions, and the creation of sound public sentiment.

Resolved, That this convention urges upon the National Cattle Growers' Association the appointment of a committee which shall be charged with the presentation and persistent support before the Congress of the United States, at its approaching session, of measures for the perfecting of existing laws; for the creation of adequate provisions for national oversight and control of cattle disease under the direction of the Commissioner of Agriculture; for the appropriation of not less than $1,500,000 for such over-

sight and control; for the employment of a sufficient number of expert and competent men; for the payment by the General Government of a reasonable valuation (upon the basis of health prior to infection) for animals slaughtered on account of disease, and for the due enforcement of such laws.

Resolved, That this convention hereby instructs its presiding officer and secretary to memorialize the incoming Congress of the United States in aid of the measures set forth in the last preceding resolve, bespeaking its prompt and liberal action in the interest of the whole people.

Second Annual Convention of Cattlemen, Saint Louis, November 23 to 28, 1885.

The following recommendation as reported by the committee on resolutions was adopted by the convention:

SPLENIC FEVER.

It is an accepted fact that the passage of apparently healthy cattle from the coast country and low lands communicate a disease called splenic or Spanish fever to cattle of a higher altitude. Another fact in connection with this disease is that cattle coming from low altitudes, after having been kept for a limited time in higher altitudes, do not communicate this disease. This infection has proven disastrous to herds and cattle in more elevated regions, and has created such apprehensions that other restrictive regulations have been adopted in several of the Western States and Territories prohibiting the passage of cattle to their accustomed markets. These regulations are not uniform. In some of the States and Territories they are virtually an interdiction upon inter-State commerce; in others, onerous taxes are imposed. Your committee are of the opinion that these conflicting regulations (some of them arbitrary and difficult, if not impracticable, to be complied with) will, if persisted in, prove disastrous to the cattle interests of the entire country, and will greatly diminish the values of cattle in certain localities and augment them in others. By disturbing, also, the natural laws of trade and obstructing its avenues monopolies are built up at the expense of the consumer.

In view of these facts, your committee would most respectfully recommend that this convention request Congress to pass such laws as will place the whole subject matter under the control and jurisdiction of the General Government, giving authority to establish such quarantine regulations within proper boundaries and limits, and to set apart from lands belonging to the United States such quarantine grounds as shall be ample protection and best promote and subserve the cattle interests of the entire country.

Resolved, That this convention respectfully ask Congress to take such measures as will effectually stamp out the disease of pleuro-pneumonia and other foreign contagious diseases which may be brought to exist among cattle and horses of the United States.

Resolutions of the Iowa State Improved Stock Breeders' Association, December 3, 1885.

Resolved, That this association requests of the Iowa legislature a law appropriating $50,000 to stamp out promptly any outbreak of contagious pleuro-pneumonia that may happen in the State.

Resolved, That we favor Federal statutes appropriating sufficient money to clean out the disease centers in the Eastern States where pleuro-pneumonia is located, under the supervision of the Department of Agriculture.

Carroll County, Illinois, Live-Stock Growers' Association, Lanark, Ill., December 24, 1885.

Whereas the Bureau of Animal Industry, which was established by Congress for the purpose of protecting the live-stock interests of the United States from the importation and spread of contagious diseases among cattle, has been hampered and restricted in its work from lack of means and lack of authority; and

Whereas the necessity still exists for prompt national aid in the suppression of pleuro-pneumonia and the prevention of its spread from one State to another; therefore,

Resolved, That we, the members of the Carroll County Live-Stock Growers' Association, ask and earnestly urge our Representative in Congress, Hon. R. R. Hitt, to use his best endeavors to secure such amendments to the animal industry bill and to secure such an appropriation of funds as shall be necessary to at once destroy all animals infected with pleuro-pneumonia in the United States and to prevent its importation in the future.

Resolved, That we regard the officers and committees of the National Cattle Growers' Association of the United States, appointed to bring the matter before Congress, as honorable authorized representatives of the live-stock interests of the whole country, and we ask our Congressman, Hon. R. R. Hitt, to aid them in securing such legislation as they may ask for the benefit of the live-stock interests.

Texas Live Stock Association, Fourth Annual Session at Austin, January 12, 13, and 14, 1886.

Mr. Rogers offered the following resolution, which was adopted on motion of Mr. Buzard:

Resolved, That we, the members of this Texas Live-Stock Association, indorse the action of the National Cattle and Horse Growers' Association in recommending to the Senate and Congress of the United States a national, in lieu of the present State, control of sanitary regulations and quarantine measure.

Resolutions of the International Range Association.

The following resolutions were adopted at the First Annual Convention of the International Range Association, held in Denver, Colo., January 27, 28, 29, and 30, 1886:

Whereas contagious disease is one of the greatest dangers to which the range cattle industry is exposed; and,

Whereas from the manner in which our cattle are handled, they being scattered over wide tracts of unsettled country, contagious disease, if once introduced, could never be eradicated; and,

Whereas contagious diseases of cattle were first introduced into the United States from Europe, and said introduction was made possible by lack of proper care and restriction on the part of the United States Government at its ports of entry; therefore,

Resolved, (1) That we hold it to be the duty of the General Government to eradicate such disease speedily and effectually wherever it may exist, and to prevent its further introduction.

(2) That recognizing the Bureau of Animal Industry as the instrument created and especially designated by Congress to do this work, we hereby cordially indorse said Bureau and approve its past efforts to perform said duties.

(3) Believing the usefulness of said Bureau is hampered and limited by the present legal restrictions of the law under which it acts, and that while it has done much good, its failures are due to said restrictions, we hereby ask Congress to increase the power of said Bureau as outlined by the Annual Report of the Commissioner of Agriculture, and also ask of our various Senators and Representatives that they give their earnest support to such a measure.

Resolutions of New York Farmers' Institute.

At a session of the New York State Farmers' Institute, held in Ithaca, N. Y., on February 18, 1886, the following resolutions were adopted after considerable discussion:

Resolved, That we are in favor of Congress providing immediately for a thorough investigation, under the direction of the Department of Agriculture, of the causes and spread of hog cholera, (swine plague,) and also of the origin and propagation of trichinæ in swine, and for preventives of the same.

Resolved, That we also are in favor of a suitable appropriation and ample provisions of law to protect all domestic animals in the United States against the spread of all infectious and contagious diseases, the same to be done under the department of Agriculture.

Resolved, That Congress should enact a law taxing the manufactures known as oleomargarine, butterine, and all imitation-butter compounds, and require that each and every article denominated butter and sold as a substitute therefor should be marked with an internal-revenue stamp, so that they may be known, the same as tobacco, under their different forms under the internal-revenue laws of the United States, with the same penalty for all violations of such law.

Resolved, That a copy of these resolutions be sent to the Senators and Representatives in Congress from the State of New York as the sentiment of the Farmers' Institute, gathered from all points of the State, and held at the Cornell University February 16, 17, and 18, 1886.

INVESTIGATIONS IN SWINE PLAGUE.

During the past year the investigations concerning this disease were carried on without intermission. The methods adopted were those used by the most advanced investigators as well as those which suggested themselves to us directly and grew out of the necessities of the case. At least 20 animals were carefully examined in the earlier part of the year. In nearly all instances the disease had been communicated from the sick to the healthy by contagion, either at the experimental station of the Bureau or in neighboring herds. Very few showed any disease of the lungs. In fact, the disease manifested itself chiefly by extensive ulcerations of the cæcum and colon (Plate I). The animals lingered usually from one to three weeks after the first appearance of the disease and in nearly every case were killed in the last stages to prevent any *post-mortem* changes, as the animals, when left to themselves, usually die early in the night and decomposition sets in very rapidly during the spring and summer months in this climate.

It was our intention to study carefully the microbes found in the various exudates of the serous cavities, especially that of the peritoneal cavity, which has been considered very virulent by former observers. A simple and safe mode of collecting these exudates will be described in detail further on.

In cases of advanced disease, characterized by extensive ulcerations of the large intestine, it was found, on microscopic examination of lymphatic glands and other organs invested by the peritoneum, that the latter membrane was covered with a layer of lymph in which were imbedded various kinds of bacteria, micrococci of different sizes, slender as well as thick bacilli. Cover glasses brought in contact with the peritoneum likewise contained several forms. Finally the persistent impurity of the contents of vacuum tubes as well as cultures made directly from the serous effusions at the *post mortem* examination, forced us to conclude that we must not look for any pure culures from this source. The inference was that microbes gained access to the closed cavity through lesions caused by the extensive ulcerations of the large intestine, which always accompanied these cases, and that they were not there destroyed, either because the system had been so debilitated or the microbes were capable of a parasitic existence.

The peritoneal exudate had been pronounced virulent by Klein, who thence obtained the bacillus, claimed by him to be the cause of swine plague. We determined to isolate and study the different bacteria which we should meet with in this exudate by culture and inoculation. If the lesions in the intestine were due to a local multiplication of the specific microbe in the mucous membrane, it seemed natural to suppose that it would be very abundant in the contents of the intestinal canal, and would find its way with the other bacteria into the peritoneal cavity, and that having become adapted to the struggle with animal tissues it might even outgrow the other forms in this situation. At the same time the possibility must not be set aside that septic bacteria might gain entrance in the same way, and by a rapid invasion of the blood or lymphatic channels, or both, materially change the clinical aspects of the disease and give rise to various apparently inexplicable phenomena and sequelæ. In two cases a bacillus was found in the peritoneal cavity made up of long, jointed filaments, and probably identical with the bacillus of malignant œdema (*vibrion septique*), the spores of which, according to Koch, are abundant in the soil. These filaments

were found in great abundance on cover glasses upon which a delicate film of peritoneal exudate had been dried. In another pig, which died in the night during a heavy frost (November 22, 1884), and which was examined early next morning, a cover glass touched to the peritoneal surface of the liver was found crowded with a bacillus in long jointed filaments, no doubt identical with the preceding. The appearance of the abdominal cavity in this case, as indicated in the notes of the *post-mortem*, are briefly as follows: Abdomen on opening emits a faint odor not observed in previous cases. Ulcers of the mucous membrane of the large intestine plainly visible through the peritoneum; peritoneum dry, no serum in the cavity, no evidence of peritonitis. Liver of a pale reddish color, on section, bloodless; cæcum and colon studded with ulcers, some covered with a projecting black, necrotic mass. Sections of the liver hardened in alcohol were found to contain three different forms of microbes, the bacillus found on the surface of the liver, the individual filaments of which were very long; a small, slender bacillus and a micrococcus; these were present in equal numbers. The cover glass with which the peritoneal surface of the large intestine had been touched in close proximity to the ulcers, revealed not a single microbe among the numerous epithelial cells which had come away. Thus the invasion of the bacillus was no doubt by way of the bile ducts in this case. The presence of such large numbers of microbes in the liver tissue can hardly be accounted for by a *post mortem* growth in this instance. In blood collected from the heart and examined unstained, this same bacillus was found, the elements pale and almost disintegrated.

In sections made of one of the ulcers, the mucous membrane was found entirely thrown off, as well as a portion of the submucous connective tissue. The muscular layer was replaced by an inflammatory infiltration of cells and enormously thickened, so that the line of fatty tissue in the submucosa was pushed forward into the lumen of the tube and formed two sides of a cone (the apex of which had sloughed away) between the mass of infiltrated cells. Various kinds of bacteria were found in this inflammatory tissue, but towards and beneath the peritoneum were colonies of micrococci occupying intervals between the cells and layer spaces probably lymphatic. This case is cited simply to point out what may be found in a case of advanced swine plague in which the lesions are concentrated in the large intestine chiefly, and the lungs mostly intact. It indicates somewhat the difficulties in the way, the time that must be consumed before any trustworthy results are obtained, and the caution that must necessarily be exercised in coming to a conclusion.

In endeavoring to carry out the plan of isolating and cultivating the bacteria found in swine plague, the work was retarded by the difficulty of keeping on hand cases of swine plague contracted in the natural way, and by the heat of summer which completely interfered with the ordinary nutritive gelatine cultures. Finally a special "cold-box" was constructed in connection with the cold-air chamber of an ordinary refrigerator, and thickly padded with felt. The air within this box, in communication with that of the refrigerator by an upper and lower pipe, remained about 10°F. below the temperature of the laboratory, which for several months rarely fell below 90°F. at night. Plate-cultures and tube-cultures were kept in this box, and only removed for purposes of examination and inoculat on. In this way only, were we able to utilize gelatine, after losing many plates upon which hours had been spent the day previous.

Perplexed by contradictory results, and failing to obtain any pathogenic germ by isolating the different forms found in the peritoneal effusion, the discovery of a fine bacillus in Germany, causing a disease in swine which was regarded as identical with swine plague in England and the United States, attracted our attention. The bacillus, of exceedingly small size, was described as being present in large numbers in the spleen and other organs of diseased pigs, and it was said that the disease could be at once determined by examining portions of the spleen, dried on cover glasses. As this bacillus had never been seen by us, we decided to examine the spleen very carefully, in order to determine its presence or absence.

The disease having for the moment died out at the experimental station, our attention was directed to an outbreak in Salem County, New Jersey, where it had assumed quite extensive proportions. Two young animals were killed. In both, the large intestine was extensively ulcerated, the lungs partially hepatized, and the large serous cavities filled with effusion. Without going into details we need but to state that in numerous cover-glass preparations of the spleen the fine bacillus was absent. Cover-glass preparations of lung tissue and of the serous effusions equally negative.

In regard to the cultures made in gelatine tubes, the results did not differ from those obtained heretofore. In three cultures of the blood of one animal, nothing grew; in one from the other animal, 3 or 4 colonies appeared. Several cultures from the same animal were entirely negative. From the spleen of the first, 3 different microbes were isolated—2 micrococci and a bacterium. In cultures from blood and serous exudates, several other forms were isolated. In all, 5 bacteria from these two animals were studied (4 micrococci and 1 bacterium). Inoculations of each into 2 mice and 2 pigs failed to produce any disease, with the exceptions mentioned below. The cultures in gelatine proved that both in the blood and in the spleen these bacteria were very few in numbers, so that they could not be detected in cover-glass preparations. We were fully satisfied that the fine bacillus claimed to be the cause of the disease in France and Germany was not present.

Anticipating somewhat the conclusions which we arrived at later concerning the real cause of this puzzling disease, we must say, at this point, that we no longer consider a micrococcus as the cause of all outbreaks of the disease known as swine plague. The first annual report of the Bureau mentions the death of 3 pigs from inoculation with a micrococcus. This micrococcus is easily distinguished by its peculiar growth on gelatine, which it rapidly liquefies. Since that time it was not found, excepting in one of the two cases just described. The inoculations with this produced a rise of temperature within ten days in the 2 animals, which subsided in a few days after. One of the animals was killed about seventeen days after inoculation. The lungs were found extensively hepatized. The presence of numerous lung worms left us in doubt as to the cause of this hepatization. Tubes inoculated from the spleen and blood remained sterile. The second animal died of swine plague one month after inoculation. The results which we obtained later on with another microbe lead us to suspect that this was a case produced by natural infection. Whether this micrococcus is a septic organism or one which is the cause of a definite disease in pigs cannot be answered at present.

The attention aroused abroad by Pasteur's vaccine as a protective against the disease known as *rouget* in France and *rothlauf* in Germany, and there regarded as identical with the disease prevailing in our own

country, led us to examine carefully two tubes of vaccine, known respectively as first and second vaccine, which were kindly sent to us by Prof. A. Liautard, of New York, and which he had received directly from Pasteur's laboratory. We were surprised to find that the microbe in the vaccine was identical with that described by German investigators as being the cause of the disease in Germany. This microbe was without doubt a bacillus, exceedingly small to be sure, but not at all recalling the microbe originally described by Pasteur and Thuillier as having the form of a figure of eight. We shall later state our reasons for supposing that the microbe first discovered by Thuillier and the one now cultivated as a vaccine in Pasteur's laboratory are two entirely different microbes and the cause of two distinct diseases. In the following chapter the results of our experiments with the vaccine are given in detail, and from them it will be seen that it does not prevent swine plague, for the simple reason that the vaccine of one disease cannot protect against another.

AN EXAMINATION OF PASTEUR'S VACCINE FOR ROUGET.

On October 16 a tube was received at the laboratory containing about 15^{cc} of Pasteur's vaccine for *rouget*, the European swine plague. The color of the liquid, which was faintly turbid, was of a light reddish yellow. A rubber cork securely closed the mouth of the tube. On drying minute portions on cover glasses for the purpose of examining the kind of microbe it contained, the culture liquid was found to contain a considerable proportion of solid matter, which formed a thick layer on the cover glass, and did not adhere firmly during the operation of staining and washing. This residue is in all probability peptone, as there is no precipitation on boiling. Judging from the amount of residue, the culture liquid contained at least 2 per cent.

When stained in methyl violet, prepared by adding a drop of an alcoholic solution to a watch glass of distilled water, and examined with a $\frac{1}{18}$ homogeneous objective, the microbes appeared as bacilli in the form of very slender filaments, which assumed various curves, loops, and broken lines. As the manner in which the vaccine had been put up did not seem to guarantee the absolute purity of the culture, a number of plate-cultures were made, whence to obtain pure cultures. Two days later a few scattered colonies appeared in the form of a rosette of club-shaped elements. These were small bacteria. On the following day a large number of very small round colonies could be discerned with a magnification of about 60 diameters. These were no doubt the fine bacilli. A greenish film began to encroach upon the plates and liquefy the gelatine.* Five days after the plates had been prepared the colonies could not yet be distinguished with the naked eye. Under a 1-inch objective they appeared as large as pins' heads. To avoid total loss of the plates by the encroachment of the chromogenous, putrefactive microbe, a spot was selected under a dissecting microscope free from colonies of what were supposed to be contaminating bacteria, a minute portion of the gelatine layer containing a number of barely visible colonies was dug up and transferred to 10^{cc} of beef broth with 1 per cent. peptone. On the 23d, two days after inoculation, a faint opalescence was observed in both tubes, which on shaking was resolved for the moment into delicate

* A microbe was described by Schütz as being in the vaccine used in Baden which produced the same greenish coloration.

rolling clouds. There was no membrane or deposit. From another plate a tube culture in nutritive gelatine and one in beef broth with peptone were made in the same way. In three days the liquid culture presented the same appearance as those made from the other plate. Films, dried on cover glasses and stained for half a minute, contained the same bacilli as those found originally in Pasteur's liquid vaccine. The track of the platinum wire in the tube of gelatine became opaque in a few days. A row of cloud-like masses began to spread from it as a center and appeared as if strung on the needle track, which was now very faintly discernible (Plate II, Fig. 6). These clouds were fringed at the edges and when approaching one another, the entire growth presented the appearance of a minute test-tube brush* forced down into the transparent gelatine. We were therefore led to conclude from microscopical and culture appearances that the microbe of Pasteur's vaccine was not a figure-of-eight form as he himself described, but a bacillus not to be mistaken for a micrococcus.

INOCULATION WITH THE FIRST VACCINE.

(*a*) *In mice.*—It had been experimentally determined by Löffler that the bacillus of *rouget* resembles very closely the bacillus which produces septicæmia in mice in microscopic appearances, in its mode of growth in gelatine as well as in its behavior towards the white blood corpuscles in the body of the infected animal. If the bacillus of Pasteur's vaccine is identical with the bacillus of *rouget* in Germany, and not too attenuated, it should produce septicæmia in mice. On October 17, three mice were inoculated by injecting, beneath the skin of the back of two, five drops; of the third, ten drops of the vaccine. They were kept in a large glass bell-jar, covered with a sheet of tin perforated with large holes over its entire surface, and were supplied abundantly with food and water. To avoid pain they were invariably chloroformed before inoculation. October 20 one mouse was plainly ill; it moved with difficulty, had a staring coat, and suffused, partly closed eyes. It was found dead the next morning, or about four days after inoculation. Portions of the spleen, liver, and blood from the heart were rubbed on cover glasses, dried and stained for half a minute in an aqueous solution of methyl violet. Two cultures, one in gelatine and one in beef-broth peptone, had been previously made. On the three cover glasses very fine bacilli were found quite abundantly, some free, and some within white blood corpuscles (Plate II, Fig. 5). In one cell, at least thirty could be counted. The presence of large numbers of bacilli in white blood corpuscles from the spleen of mice in which septicæmia had been produced by the injection of putrid blood was pointed out as far back as 1878 by Koch, and lately comfirmed by Löffler and Schütz, in mice inoculated with the virus of *rouget*. The culture in gelatine of blood from the heart assumed precisely the same appearance as did the culture from the gelatine plates. The liquid culture proved to be made up entirely of the fine baccili, while its microscopic appearance coincided with the liquid cultures from the gelatine plates. October 24 another mouse showed symptoms of illness. The eyes were slightly suffused, the coat staring, and the respiration labored. It lived through the next day, but was found dead on the morning of the 26th, nine days after inoculation. In the liver and blood

*Within a few days a book on *rouget* (*Lydtin u. Schottelius: Der Rothlauf d. Schweine*) was received in which the term "test-tube brush" is also used in describing the appearance of the gelatine culture.

a moderate number of bacilli were found; in cover glasses of the spleen they were not observed. A culture of blood from the heart in beef-broth peptone contained, two days later, a pure culture of the slender bacilli. The third mouse remained well. Inoculations with the pure culture of the vaccine were not attempted for want of time. The above illustrates very clearly how in certain cases pure cultures may be obtained from impure mixtures by simply inoculating with the mixture an animal susceptible to one of the forms only.

The foregoing experiments seemed to us sufficient proof that the mice had died from a multiplication in the various organs of the bacillus found in Pasteur's vaccine. We were also convinced that the bacillus cultivated as a vaccine in France was identical with the bacillus regarded as the cause of *rouget* in Germany.

(*b*) *Vaccination of pigs.*—October 16, pigs 78 and 94 were inoculated, each with five drops of the first vaccine, one-half into each thigh. Nos. 76 and 95 received in the same manner about 2^{cc} each of the same vaccine. Pig 78 died October 20. Having a black skin, discolorations could not be made out. In the peritoneal cavity a very large quantity of coagulable, straw-colored lymph was found; a fibrinous exudate covered the coils of the large intestine, and lumps of the same lay loose in the cavity; the peritoneum itself was pale. The liver was of a pale flesh color and almost bloodless, the lobules standing out very distinct. A fibrinous exudate matted the different lobes together. Lungs of a rosy color, slightly congested, some serum in the pleural sacs as well as in the pericardial cavity; right heart distended by a clot, left empty. In the stomach an intensely red patch was found near the pylorus covered with a whitish mucous layer readily removed. The intestines apparently healthy. The inguinal glands of one side were considerably reddened. In order to see how far the inoculation with a few drops of the vaccine was accountable for death, cover glasses upon which bits of the spleen and liver had been rubbed, and others upon which blood and serum from the peritoneal cavity had been dried, were examined, but they contained no bacteria of any kind. Cultures in gelatine tubes were prepared with a platinum loop from the peritoneal, pericardial, and pleural effusions from the cut surface of spleen and blood from the heart. A portion of the spleen was dropped into a liquid culture at the same time. A pipette was filled with the peritoneal effusion, and one with blood. On the following day, two tubes, one of meat broth, the other of meat broth with peptone, received each several drops of the peritoneal exudate from a pipette. Two additional tubes were inoculated with a platinum loop from the pipette containing blood from the heart.

All of the above cultures remained sterile, excepting the two liquid cultures of the blood and the gelatine tube containing a portion of the spleen. Both the former became faintly clouded on the second day after inoculation, and were found pure cultures of the bacillus found in the vaccine. It is probable that they had multiplied in the pipette over night and made infection possible, as their number in the blood must have been very small.

About two weeks after inoculation a faint, cloud-like growth from the bit of spleen, which was about the size of a split pea, downward into the gelatine could be easily seen. When the bit of spleen was removed a week later, and rubbed on cover glasses, exquisite preparations of the *rouget* bacillus were obtained. Masses of filaments could be seen interlacing with one another in all directions. Most of the filaments were of considerable length (20 to 30 micromillimeters). The injected bacilli

had thus penetrated the system quite thoroughly, though present at any one place in but small numbers.

The three remaining pigs which had been vaccinated appeared undisturbed by the process. The temperature chart is given on page 192, in connection with the second vaccination.

A tube of the second vaccine was received at the laboratory on October 23. It remained unopened in a cool box at a temperature of 60° to 65° F. until October 28, when a portion was used for the second vaccination of pigs, another for the inoculation of mice, and a third for microscopical examination and cultivation. In general appearance, color, and consistency, the liquid resembled the first vaccine closely. On removing the rubber stopper, there was a sudden outrush of air, which scattered a portion of the liquid as a fine spray. At the same time minute air-bubbles rose to the surface of the liquid forming a delicate, white, foamy layer.

Portions were immediately dried on covers, and stained in an aqueous solution of methyl violet. Examined with a Zeiss $\frac{1}{18}$ homogenous, Oc. 2, two kinds of bacilli were found (Plate II, Fig. 4). Large ones with rounded extremities from 2.5 to 4 micromillimeters long and about .7 micromillimeters broad, a few in chains of two to four, the majority isolated. Some failed to stain deeply, probably because dead. The other bacilli resembled closely those found in the first vaccine. They occurred in slender filaments, either curved or angled. Some of the filaments were plainly jointed, the segments measuring not more than from 1 to 1.2 micromillimeters in length; a few isolated bacilli were of the same length as the segments of the longer filaments.

Plate cultures were at the same time prepared by adding two drops of the vaccine liquid to 10^{cc} of beef-broth peptone, and mixing one drop of this dilution with 10^{cc} of nutritive gelatine, which was spread on two plates. At the same time two additional plates were prepared by adding merely a platinum loop of the dilution to 10^{cc} of the gelatine. Though examined from time to time for nearly a week, no colonies of the bacillus could be detected. But this was easily explained when the tube, which formed the dilution for the plate cultures, was found sterile after four or five days. It seemed as if the microbes were dead, the large as well as the small bacillus. On October 31, two additional cultures were prepared by adding to each about four drops of the vaccine, which after exposure had been kept in a refrigerator. On the third day one culture was faintly clouded, and found to contain the delicate bacilli; the other tube remained clear. The great majority of the bacilli in the vaccine were evidently incapable of multiplying. That the culture liquid was not at fault was afterwards proved by inoculating the tubes which had remained sterile, with pure cultures of the first vaccine. An abundant growth was observed in two days.

Inoculation of mice.—On October 28, 2 mice were inoculated, each with one drop of the second vaccine, 3 with three drops each, and 1 with four drops. The mouse inoculated with the first vaccine and still well received about two drops. October 31, 1 of the mice inoculated with three drops was found dead. Limbs partly flexed; eyes half closed. The organs were normal in appearance, excepting the lungs, which were intensely congested; cover-glass preparations from the liver, spleen, blood from the heart and lungs contained no bacteria; a meat-broth peptone and a gelatine culture, inoculated with blood from the heart, remained sterile. In this case death could not have been caused by the inoculation. On November 4, one week after inoculation with

three drops of the vaccine, a second mouse died, after having shown signs of illness for a day or two previous. It was found with limbs flexed as in sitting, but it had fallen forward on its head from a piece of bread on which it had been sitting. The back was arched, the eyes closed with slight secretion. On removing the skin of the abdomen a few red patches were found on its inner surface. There was a collection of serum in the fold of the groin on each side where the lymphatic glands stood out prominent. There was some serum in the peritoneal cavity; the spleen was dark and tumefied; the liver quite dark; kidneys pale. On section the cortex was paler than the medulla; through both regions small ramifications of a dark red color extended; lungs normal. Cover-glass preparations revealed the minute bacilli in the blood from the heart, in the lungs, spleen, liver, and kidneys. Their number in all organs excepting in blood from the heart was enormous. In the lungs, liver, and spleen large pale cells were found in large numbers gorged with the bacilli. (Plate II, Fig. 5.) Small cells were also observed in which the stained bacilli were so numerous as to give the cell a deeply-stained, reticulated appearance. A gelatine and a liquid culture were prepared by snipping away the apex of the heart with flamed scissors and transferring some blood with a platinum wire. These tubes, strange enough, remained sterile. The remaining mice showed no signs of disease. These experiments go far to demonstrate the identity of the pathogenic bacilli in both vaccines. The large bacillus may have been some harmless microbe, the introduction of which into the culture took place, no doubt, when the tubes were originally filled with the vaccine liquid.

We infer from the culture and inoculation experiments that the second vaccine was as weak as the first—probably much weaker. The bacilli of the first vaccine developed abundantly on gelatine plates, while those of the second did not. The latter failed in two out of three cases to grow in liquid media, while the former readily grew in all inoculated tubes. Their behavior towards the mice agrees with these determinations. The efficiency of the vaccination which depends on the quality of the second as well as that of the first vaccine is much impaired when the strength and vitality of the preparations cannot be relied on. It is true that there is much time lost in importing the vaccine from Paris, but as both vaccines were subjected to the same conditions, the great attenuation of the second vaccine in comparison with the first must be ascribed to a failure in preparation. In fact, it is reasonable to anticipate that the time lost in importing the vaccine would be a serious obstacle to its application in this country, even if it could be shown, which is by no means proved, that the same disease existed here, as long as the present methods of keeping the vaccine remain in use.

(*b*) *Vaccination of pigs.*—The vaccination was undertaken October 28, twelve days after the first vaccination. Pigs Nos. 76, 94 and 95, which had received the first vaccine, were inoculated by a hypodermic injection of about two and a half drops, which is the prescribed dose. In addition to these, 2 other pigs, Nos. 103 and 104, received each about 2^{cc} of the same vaccine, one-half into each thigh. Our object was to produce the disease, if possible, by a large dose and compare it with the disease prevalent here. None of the animals became sick, however.

The following table gives the temperature of each vaccinated pig from the day of the first vaccination to November 6:

First vaccination, October 16.

Date of inoculation.	Pig No. 76.	Pig No. 78.	Pig No. 94.	Pig No. 95.	Pig No. 103.	Pig No. 104.
	° F.	° F.	° F.	° F.	° F.	° F.
October 16	103	102½	104⅛	103	.....	.....
October 17	103½	102	104⅛	102¾	.....	.....
October 19	102½	102½	103½	103⅛	.....	.....
October 20	103⅞	(Died.)	104	103¼	.....	.....
October 21	103¼	.....	103⅜	103½	.....	.....
October 22	103⅜	.....	103¼	102½	.....	.....
October 23	104⅛	.....	103	103	.....	.....
October 25	102	.....	102⅜	103	.....	.....
October 26	102⅜	.....	103¼	103½	.....	.....
October 27	102½	.....	104	103	.....	.....
October 28	103	.....	103⅜	103¾	104½	104⅝

Second vaccination, October 28.

October 29	103	.....	103	102⅝	103½	102½
October 31	103½	.....	103⅜	103	103⅜	103⅛
November 2	103	.....	103	103⅛	103⅜	102⅜
November 5	102	.....	102½	103	102½	100½
November 6	102½	.....	103⅜	103¾	103½	101

One week after the second vaccination these pigs were penned with two others which were affected with swine plague of a very severe type. These animals had been obtained from a place several miles from the experiment station on November 4, as no cases of swine plague had been kept at the station since the summer of the same year. One of these pigs (No. 105), died on the same day, the other (No. 106), died in the night between the 6th and 7th. The contact of the healthy with the diseased did not, therefore, extend over a period of more than two days.

The history of these vaccinated animals is briefly as follows: On the morning of November 15, pigs 95 and 103 were found dead. The former had been twice vaccinated, receiving about 2^{cc} of the first vaccine (at least ten times the proper dose) and about 3 drops of the second. Pig 103 had received about 2^{cc} of the second vaccine only (also about ten times the prescribed dose). *Post mortem* at 2 p. m.; temperature of the night previous and day 40° to 50° F. There was no distinct discoloration of the skin noticeable. The superficial lymphatic glands of the groin were tumefied and reddened. On opening the abdomen, the small intestines were found studded with whitish excrescences, caused by the attachment of echinorhynchi. Delicate filaments, stretched across the coils of the intestine and some serous effusion indicated slight peritonitis. Mesenteric glands enlarged and congested, mesenteric vessels dark, gorged with blood. Lungs and heart evidently intact. The bronchi contained a few lung-worms. Spleen and liver not noticeably changed. In examining the intestinal tract, a large area of the mucous membrane of the stomach was intensely reddened, some places of a bright scarlet, others duller. The ileum was congested; no ulcerations visible. The cæcum and large intestines were intensely reddened. For some distance from the valve the mucous surface was studded with small discolorations which, on close examination, were depressions or commencing ulcerations. About the ileo-cæcal valve there

were small masses of yellowish matter plugging the distended mouths of the flask-shaped glands. In pig 103 the *post mortem* appearances were as follows: The major part of the lungs was highly congested, a considerable quantity of a pale reddish liquid in both pleural sacs. The surface had a mottled appearance, due to islands of dark red color, surrounded by paler tissue; no hepatization; lung-worms present. Stomach and small intestine not affected; echinorhynchi attached to its walls; ascarides extending up into bile ducts. Large intestine and cæcum intensely congested, as with No. 95; a large patch of ulcerations about the valve; a few nodular swellings, probably enlarged follicles. The lymphatic glands of the abdominal cavity in general tumefied, purplish. We felt no hesitation whatever in pronouncing both as having had wine plague.

Pig 104, which had been inoculated with the second vaccine only, but which had received a large dose of the same (about 2^{cc}) was found dead November 7, and examined immediately. There was no discoloration of the skin perceptible. The superficial lymphatic glands of the groin somewhat enlarged and slightly reddened. A small quantity of serum in the abdominal cavity. Dark bluish protuberances and whitish spots on the small intestine indicated the presence of echinorhynchi. The lungs were much congested, the bronchi filled with lung-worms, some ascarides in the stomach. Lesions characteristic of swine plague were not found in the large intestine.

Pig 94, which had received five drops of the first and about three drops of the second vaccine, died very suddenly on the morning of November 18. It had been apparently well a few hours before death. The *post mortem* examination was made within an hour after death. The skin of the ears, about the vulva, and along the middle line of the abdomen, covered with a red blush; isolated red patches on the inner aspect of the limbs and on the ventral aspect of the neck; the inguinal glands beneath the skin enlarged, pale; on incision much serum flowed. The subcutaneous fatty tissue over the lateral aspect of the abdomen was dotted with numerous punctiform extravasations. In the abdominal cavity the large intestines presented a very striking appearance. Beneath the peritoneal coat, throughout its whole extent, it was covered with innumerable blood extravasations, varying from a mere dot to oblong patches about one-eighth to one-quarter inch long. The spleen, somewhat enlarged, was dotted with numerous slightly elevated dark spots. The stomach, along the lesser curvature, was sprinkled with ecchymoses. The peritoneal cavity contained a moderate quantity of serum. The right heart was filled with serum, darkened by suspended corpuscles; the left quite empty. On the auricles a number of minute red dots were present. The lungs were but slightly congested. Over the surface of both were scattered numerous dark red patches about one-eighth inch in diameter. On section these were found to correspond to dark hepatized lobules beneath. A few lung-worms present. All the lymphatic glands in the thoracic cavity were of a very dark red color. On section this color was found throughout the gland, and a large amount of dark-colored blood flowed from the cut surface. The lymphatic glands about the stomach and along the entire extent of the meso-colon were enlarged, dark purplish, similar in appearance to those of the thorax. Those of the colon resembled dark red beans in size and color. The glands of the mesentery were enlarged, the cortex reddened, medullary substance slightly so. The mucous membrane of the stomach was studded with red points near the lesser curvatures. In a few places hemorrhages had occurred. The clots, when pulled away,

revealed patches thickly covered with ecchymoses. The small intestine in general did not exhibit any signs of inflammation, as the membrane was quite pale. But here and there red points and larger patches of extravasation were found. The large intestine, distended with food, was the seat of the most extensive lesions. The entire mucosa was thickly dotted with ecchymoses, varying in size from points to large purplish patches. In the rectum small red patches, when examined with a lens, were found to consist of a net work of injected vessels. Among the contents of the large intestine, about 10 inches from the ileo-cæcal valve, a black mass as large as a man's fist was found which was made up of feces enveloped in a thick layer of clotted blood. In the sub-peritoneal tissue near the cephalic border of each kidney there was an ecchymosis about 1 inch in diameter. In one kidney a papilla contained several small ecchymoses.

This animal was free from intestinal worms, differing in this respect from the majority of those which were examined about the same time. The animal had succumbed to the first onset of a very virulent attack of swine plague, so that ulceration had not yet begun in the large intestine.

Pig No. 76, an adult animal, is still alive (February, 1886), and, to all appearances, well.

Thus 3 of the 5 animals which had been vaccinated died of swine plague, and moreover in the early stages of the disease. One of them, pig 94, just described, had been in excellent condition and was comparatively free from parasites. Hence, any protection from the American swine plague conferred by this vaccination was out of the question.

Moreover, in these cases great care was bestowed on the examination of cover glasses of the spleen, of the various exudates and blood from the heart. In none of them could the delicate bacilli of *rouget* be detected. We had sufficiently familiarized ourselves with their appearance in the vaccines, in cover-glass preparations of the organs of mice inoculated therewith, and in cultures in liquid and solid media, so as to exclude any errors of observation. We are enabled to say that we could not detect them by means deemed sufficient by European investigators. We claim, from our own investigations, that the disease prevalent in the East, and probably over the entire country, is different from the disease called *rouget*. The above experiments with Pasteur's vaccine do not, in our opinion, therefore, disprove the protective power of Pasteur's vaccine over *rouget*, but simply show that the vaccine for one disease will not protect against another.

CONCLUSIONS OF THE INVESTIGATIONS CONCERNING THE CAUSE OF AMERICAN SWINE PLAGUE.

The two animals which infected the vaccinated pigs, as described in the preceding pages, deserve our attention more particularly, since they were the starting point of an outbreak at the experimental station, which has finally enabled us to demonstrate as the cause of the disease a specific microbe. This outbreak was characterized by great virulence, and most of the infected animals died in the early stages of the disease.

These two animals, when brought to the station November 4, exhibited the usual symptoms of swine plague—great depression with profuse diarrhea. The owner stated that they had been sick for about a week. On the following day one (No. 105) was so low (temperature 95° F.) that we decided to kill it, the warm weather not promising good preservation if it should die in the night. It was killed by a blow on the head. The skin was slightly bluish in the axilla, a similar but less

marked discoloration on the abdomen. The superficial inguinal glands were greatly enlarged, the individual lobules standing out prominently, some of a pale flesh color, others purplish; medulla, pale. In opening the abdomen, no lesions could be seen on superficial examination, excepting a few whitish patches on the small intestine, corresponding to ulcerations as determined later.

There was a moderate quantity of watery serum in both pleural sacs. The lungs were normal, with the exception of a small anterior lobe on each side, which was hepatized. The pericardium was slightly distended with a colorless fluid; a small clot in each ventricle. Very severe lesions were found in the intestinal tract. The partially empty stomach contained two coiled up specimens of *ascaris*. The pale mucosa was studded with several isolated yellowish ulcers, about one-fourth of an inch in diameter, raised above the surface and flattened at the top. In the ileum extensive ulcerations were found, extending for a distance of about 2 feet from the valve. These ulcers had a depressed base, as if the tissue had been dug away and were surrounded by a smooth elevated border. In the cæcum and large intestine in general, the ulcerations were very numerous, varying from one-eighth to one-half inch in diameter. The smallest ones appeared as yellowish specks. The largest ones were slightly depressed, containing black, ragged, necrotic masses. The lymphatics, at the root of the mesentery and near the ileo-cæcal valve, were greatly enlarged, representing a continuous cylindrical mass, at least an inch thick, and varying from a pale flesh color to a dark red.

This was evidently a severe case of swine plague, and one which from previous experience would prove unsatisfactory for purposes of investigation. Three cover-glass preparations from the spleen, one from the liver, two each from the hepatized lung tissue and blood from the heart were searched with negative results. No bacteria could be seen. A culture in a tube of nutritive gelatine rapidly liquefied the gelatine in the track of the needle. Several kinds of bacteria were present, including a chromogenous bacillus described as *bacillus luteus suis* in another part of this volume. This same bacillus was also present among other forms in a liquid culture inoculated directly with blood from the heart.

Liquid cultures were made by inoculating sterile nutritive media with a platinum wire dipped into the parenchyma of the spleen and liver, exposed by a cut with a flamed knife. Both contained a motile bacterium, identified later as the bacterium of swine plague. When line cultures were made on gelatine, that of spleen was obviously pure. The colonies from the culture of liver were of two kinds—one, the bacterium of swine plague proper, as determined later, the other growing in colonies having only one-fifth the linear dimensions of the former. A liquid culture, prepared by rubbing the platinum wire over the peritoneum contained, when tested by the above method, the swine plague bacterium and another microbe growing in colonies which differed from the former only in a want of color and opacity. Thus two of the three cultures were impure, as anticipated, but all contained the same motile microbe.

In order to test the matter more thoroughly, a number of mice were inoculated November 6, as follows: After chloroforming, a portion of the skin near the root of the tail on the back was freed from hair, the skin cut with scissors, and a small portion of tissue introduced into the pocket thus formed. Three mice received in this way a small ulcer from the large intestine, two each a bit of hepatized lung tissue, spleen, and kidney. Those inoculated with same kind of tissue were kept in the same jar.

One of the mice (No. 3) inoculated with a bit of kidney became ill November 9 (on the fourth day); it had a staring coat, eyes open, not suffused; dead next morning. There was no reaction at the site of inoculation, no serous infiltration of the subcutaneous tissue; lymphatics of the skin-fold of the groin dark red, also spleen; liver very pale, almost bloodless; bladder greatly distended with urine. Cover-glasses of kidney, spleen, liver, lungs, and blood from heart contain fine bacilli, resembling very closely in disposition and size those which were found in mice inoculated with Pasteur's vaccine.

A liquid culture prepared from the blood was turbid on the following day. It was found to contain a large bacillus besides the delicate bacillus which appeared in long filaments. As the former rapidly liquefied gelatine on plates and an isolation was found impossible without much extra labor, three mice were inoculated November 12 with about five drops each of this culture in order to obtain a pure culture in this way. One mouse (No. 8) died on the following day. All internal organs were crowded with large bacilli. This fact, taken together with the œdematous condition of the subcutaneous tissue of abdomen, led us to infer malignant œdema as the cause of death. On November 14 a second mouse (No. 11) was found dead. There was a sero-sanguineous effusion, as in the first case, and in all the organs large bacilli were found, but, in addition, the fine bacilli were present in enormous numbers, especially within the cells. In the blood long wavy filaments of the large bacillus were found often interlaced. The third mouse (No. 12), being very sick, was killed with chloroform. No œdema; no large bacilli, but the fine bacilli in immense numbers. From the blood of the heart two pure cultures in beef broth peptone were obtained in which the bacilli appeared November 16 as wavy, curled, or angular filaments. The contaminating bacillus produced, in the gelatine cultures, a surface liquefaction and cloudiness of the gelatine, while the colonies of the same bacillus below the surface in the track of the needle appeared as minute, roundish specks not liquefying the gelatine.

The culture in nutritive gelatine developed in a characteristic manner. From the track of the needle faint cloud-like processes extended laterally almost to the sides of the tube, so as to impart to the entire gelatine a cloudy appearance. The cultures of the bacillus of *rouget* were different in that the growth remained near the needle track, and hence was denser. This difference is also mentioned by foreign investigators.* We give these results in detail, because it is the only time in our work in which the fine bacilli resembling *rouget* made their appearance, either in cultures or in the experimental animals; and their growth in gelatine sufficiently disproves their identity with the bacilli of *rouget.*

Of those inoculated with the ulcer, one died on the tenth day; the other (No. 2), died on the fifth day; the third (No. 4), on the seventh day after inoculation.

In the lungs and spleen of No. 1 a moderate number of bacilli were found, while cover-glass preparations of kidney and liver showed none. The bacilli varied in length from 2 to 10 micromillimeters, and were about .6 micromillimeter broad; ends rounded. Mouse No. 2 died of malignant œdema. The kidney of the third one (No. 4) contained large numbers of the oval bacteria found in cover-glass preparations of the spleen in pigs affected with swine plague later on, and identified as the cause of swine plague. The paler center was very distinct, suggesting very strongly the appearance of spores. This was the first time

* *Löffler, Arbeiten a. d. Kaiserlichen Gesundheitsamte Bd. I. § 47.*

these bacteria were seen; since the cover-glass preparations, made from the organs of pig No. 105, whence these mice had been inoculated, proved entirely negative. The cultures, both solid and liquid, obtained from the heart's blood of these mice proved, as might have been expected, to be a mixture of several kinds of bacteria. The gelatine invariably became liquid. For want of time they were set aside. Two mice, inoculated with a piece of kidney of mouse No. 4, November 12, were quite sick November 14, and killed with chloroform, but no bacteria were found in the organs of either animal. The two mice inoculated with a bit of spleen seemed well about a week after. They were then removed from the jar in which they had been placed after inoculation and placed in a larger cage with other healthy mice. A few days after one was found dead, but owing to want of time was not examined. About fifteen days after the date of inoculation the other was found dead. On examination, the site of inoculation was healed over. The spleen was found enlarged to four or five times its normal size, its color resembling that of striped muscle. The surface of the kidney contained a few whitish patches. Liver with a tape-worm cyst. Lungs slightly congested. In the kidney numerous oval bacteria were found precisely similar to those found in mouse No. 4 and in the spleen of the diseased pigs. In the spleen the bacteria were of the same size, but no pale center was noticed. Our attention was now aroused to the long period of this disease in mice, accompanied by this bacterium, which was characterized by its elongated, oval form, and its paler center when stained a few minutes with an aqueous solution of methyl violet.

The other pig (No. 106) brought to the station with No. 105 died in the night between the 6th and 7th of November. The weather was warm and favorable to decomposition. On examining the viscera in the morning the lesions were found somewhat different from those of pig No. 105. The lungs were apparently intact. In the digestive tract a patch of the mucous membrane of the stomach was deeply inflamed, presenting an intensely red color. The ileum, though severely inflamed, was free from ulcerations. In the large intestine there were three or four ulcerated patches about an inch square near the valve. The mucous membrane in the remainder of the intestine was studded with closely set, blackish, depressed spots, evidently old extravasations and about to become ulcers. In this animal the lesions were not so far advanced as in the previous case.

Cultures in gelatine and liquid media of the spleen and blood from the heart remained sterile, with the exception of one colony in the gelatine culture of the spleen. Cover-glass preparations were likewise negative.

We will now return to those animals which had contracted swine-plague in spite of vaccination. The *post mortem* appearances of these animals (95, 103, 94) have already been given on page 192. In cover-glass preparations of the spleen of these pigs a peculiar bacterium was found in considerable numbers, having the form of an elongated oval, chiefly in pairs, never in chains of three or more. When stained in an aqueous solution of methyl violet for one or two minutes, its periphery became more deeply stained, giving the center a pale appearance by contrast. In cover-glass preparations of blood from the heart it could not be found. This microbe was identical in appearance with that found in some of the inoculated mice.

The gelatine cultures of the spleen from these three animals contained, in the track of the needle, forty-eight hours after inoculation, a band of very minute round colonies. A culture from a mesenteric gland

of pig No. 103 exactly resembled these. A culture of blood from the heart of pig No. 95 contained but three or four colonies; that of pig No. 103 contained a considerable number, while that of pig No. 94 contained a moderate number. The microbes in these animals were evidently the same; they appeared much larger, however, than those seen in the cover-glass preparations of the spleen. This matter will be referred to later in describing the bacterium itself.

Two liquid cultures inoculated with blood from the heart of pig No. 94 were tested by line cultures and the colonies found identical with those obtained from pig No. 105. They contained the oval, motile bacterium already mentioned.

It must be borne in mind in considering these three cases that no *rouget* bacilli were seen in any of the numerous cover-glass preparations from the internal organs, more particularly from the spleen, while the other microbe, the real bacterium of swine-plague, appeared in each, and was obtained in a condition of purity from each animal. In examining the *post mortem* notes it will also be noted that they were very acute and virulent cases. This is especially true of pig No. 94. In none of them was there more than a mere beginning of ulceration in the intestinal tract.

Of the four inoculations with pure cultures of the bacterium of swine-plague to be described further on, the first did not prove quite satisfactory from the fact that the check animal died before either of the inoculated animals. It will be seen, however, that this need not necessarily be considered as militating against our interpretation. The experiment is, briefly, as follows: Two animals (109 and 113) were inoculated November 20, each with 4^{cc} of a liquid culture from the blood of pig No. 94, one-half into each thigh subcutaneously. No. 113 was found dead December 21. The autopsy showed complete necrosis of the mucous membrane of the cæcum and colon for a distance of two feet. Beyond this the membrane was dotted with isolated ulcers. These ulcers were so deep that the serous membrane became inflamed. On each thigh at the seat of inoculation a large whitish mass was found over 2.5 inches long and .5 inch thick. The spleen of this animal contained but a few bacteria. No cultures were made as subsequent inoculation experiments had already furnished satisfactory results.

No. 109 lingered until January 7, 1886, when it was killed. In this animal tough tumors were found, at the point of inoculation, larger than a hen's egg. The lungs were more or less affected, but the presence of lung worms leaves the cause of the lesions a matter of doubt. In the cæcum, however, there were extensive ulcerations, very deep, implicating the serous covering, and producing inflammatory adhesions with the rectum. The lymphatic glands were enlarged, but pale and tough. The spleen contained no bacteria; a liquid culture therefrom remained sterile. Both must be considered as chronic cases which had outlived the direct effects of the virus, and were suffering from the indirect results thereof. The presence of large tumors at the points of inoculation indicates greater power of resistance on the part of these two animals than was shown by animals subsequently inoculated.

The healthy check pig (No. 110), penned with these, died December 6, after four or five days of illness, during which period the feces were at times covered with blood. The body was examined December 7. Skin not discolored. The inguinal glands much congested. Surface of spleen covered with numerous red, punctiform elevations. Right heart distended with a dark, semi-solid clot; two or three punctiform extravasations on the auricular appendages; lung-worms quite numerous;

lungs apparently normal, however. Stomach deeply congested in fundus. Glands of mesentery much swollen, those of colon dark red. The mucosa of large intestine intensely inflamed throughout; no ulceration. Surface of both kidneys dotted with numerous dark red points; medulla very dark. Cover-glass preparations of the spleen contain the oval bacterium in small numbers. A gelatine tube culture of spleen and one of blood from the heart, contain the same motile bacterium alone.

From the foregoing description we observe that the check animal died from a very acute attack, and it seems reasonable to suppose that it caught the disease from the two inoculated animals, and, being the more susceptible, quickly succumbed to the virus. The herd from which this animal was taken did not allow any suspicion as to its soundness, considering later observations. It is highly probable that the disease appeared early in the inoculated animals, but, owing to its comparative mildness, remained unnoticed for a time. The cultures from No. 110 were successful in demonstrating the presence of the oval, motile bacterium. Compare with this the negative results of the chronic cases.

Two mice inoculated November 19, as above, with a bit of spleen from pig No. 94, were found dead December 6; one of them drowned. The other had a very large spleen, while the kidney was quite pale. A cover-glass preparation, each of spleen, kidney, and liver, contained no bacteria. A liquid culture from blood contained the oval bacterium; pure, however. November 25, 2 mice were inoculated hypodermically with about five drops of a liquid culture of the blood of pig No. 94. November 28 one was found dead. The lungs were very much congested, and sank in water. No bacteria discernible in cover-glass preparations of spleen, kidneys, and lungs. The second one died December 3; spleen enlarged, medulla of kidney very dark, lungs œdematous, reddish. The characteristic oval bacterium present in very large numbers in cover-glass preparations of spleen, kidney, liver, lungs, and heart's blood. A liquid culture from the same found pure when tested on gelatine plates.

Two pigs (Nos. 96 and 97) were fed November 18 with the intestines of No. 94. No. 96 had a temperature of $105\frac{3}{4}^{\circ}$ F. on November 21; diarrhea set in on the following day, and continued until death, which occurred quite unexpectedly on November 24. The *post mortem* appearances were in brief as follows: Superficial inguinal glands very large; œdematous; in the abdomen a considerable quantity of straw-colored fluid; vessels of stomach, mesentery, and large intestine very full; glands of mesentery considerably enlarged, somewhat reddened; a few punctiform extravasations on right auricle. Scattered extravasations under pulmonary pleura; bronchial and mediastinal glands enlarged and very dark red; mucous membrane of cæcum of a dull purplish hue, with very thin scattered patches of necrosed tissue; at the base of the valve the flask-shaped gland distended with yellowish white plugs.

No. 97 had diarrhea on November 25; the feces mixed with blood on November 27; found dead on the following day. In this animal there were, in addition to the lesions above described, a diffused reddening of the subcutaneous fatty tissue, with numerous punctiform extravasations. The surface of the spleen was dotted with slightly raised, blood red points, most numerous near the border; liver much enlarged, borders very blunt. On section, some *acini* were much more congested than neighboring ones; medulla of kidneys, even the papillæ, deeply reddened. Besides the dusky hue of the mucosa of the large intestine, the surface near the rectum was covered with firmly-adherent coagula, which, on being removed, exposed a dark red surface dotted with darker points. The contents of large intestine blackish, as if mingled with

blood. A deeply-congested patch of mucous membrane along greater curvature of stomach, which contained several blood clots. Cover-glass preparations of spleen and liver of both animals contained the same characteristic bacterium found in Nos. 94, 95, and 103; most abundant in the spleen; those of blood were negative, as usual. A culture made in a tube of gelatine by dipping a platinum wire into the peritoneal exudate of No. 96, and then piercing the gelatine with it, remained sterile, although it was pierced three times. A culture inoculated in the same way with blood from the heart contained a moderate number of minute, uniform colonies in each track, while another inoculated by piercing the spleen contained a large number of colonies in each track. Cultures in liquid media, two inoculated with blood from the heart, one from the spleen, one from the peritoneal fluid, and one from an inguinal gland, exhibited the usual features of pure cultures of the bacterium on the following day. This was confirmed by finding them all motile, and when line cultures were made on gelatine plates of each, all the colonies derived therefrom resembled one another, as well as those of the previous cases. All cultures prepared from this case, therefore, were pure and alike.

Cultures, in tubes of gelatine, of heart's blood and spleen of No. 97, were equally successful, that of blood containing a moderate number, that of spleen a very large number, of colonies. Two liquid cultures of the blood, one from the spleen and one from an inguinal gland, contained the same motile bacterium in a pure condition as shown by line cultures.

In these, as in many preceding and subsequent experiments, we take pleasure in pointing out the fact that liquid cultures are not to be condemned, for with proper tubes and sufficient care pure cultures are invariably obtained, and as such the contained bacteria are far more accessible to study than those buried in the depths of the gelatine.

A bit of spleen from pig No. 96 was put under the skin of two mice November 25. One of them was found dead December 7. Precisely the same appearances as in the mouse inoculated with a culture from pig No. 94. The spleen was very large. The oval bacterium was found abundantly in the spleen, kidney, and liver. The other mouse died on December 12. The lesions were the same, and the bacteria were abundant in the spleen. No cultures prepared.

On December 3, 3 mice (31, 32, and 33) were inoculated hypodermically with five to ten drops of a liquid culture from the spleen of pig No. 97. No. 31 found dead December 8; no marked lesions, excepting congestion of lymphatic glands of knee-fold. A liquid culture from the heart when tested by line cultures was found to consist of the bacterium injected, and another form rapidly liquefying gelatine.

Nos. 32 and 33 died the same day. In the former the spleen was but moderately enlarged; lungs somewhat congested; bacterium in covers of spleen, kidney, liver, and lungs. A liquid culture of blood from the heart was found pure. In No. 33 the spleen was very large, medulla of kidney very dark red. Several highly congested areas on lungs; bacterium abundant in spleen; few in kidney, liver, and lungs. A liquid culture of blood from the heart found pure as above.

Two mice (Nos. 29 and 30) received under the skin of the back a bit of spleen from pig No. 97 on November 28. Both were alive and well December 22, when they were killed with chloroform. The spleen of one was but slightly enlarged; that of the other was from three to four times its normal size. No bacteria were found in either.

There was but one rabbit at our disposal at the time of these experiments. This animal had been at the station for many months. On No-

vember 27 it was inoculated by a hypodermic injection into each thigh of about 1cc of a liquid culture from the spleen of pig No. 96 found pure. It was found dead December 1. On examination the spleen was found enlarged, very dark, and friable; substance of liver and kidneys equally so. Right heart filled with a dark clot. Left heart contained a small white clot extending into the large vessels. The stomach contained two dark clots, each as large as a walnut. In the middle region, along the greater curvature, the mucous membrane was intensely reddened and dotted with dark spots of extravasated blood, the probable place of the hemorrhage. Cover-glass preparations of the spleen contained immense numbers of the oval bacterium, the liver less, the kidneys still less. They were also found in the lungs. Gelatine tube cultures of the spleen and blood from the heart grew precisely as the former cultures. Two liquid cultures each of spleen and blood contained the motile bacterium. Line cultures on gelatine proved each of them pure. This case seemed so conclusive that the want of additional rabbits was not felt so seriously at the time, although it would have been of great interest to determine whether the hemorrhage into the stomach is a constant phenomenon, since it is not unfrequent in pigs, while inflammatory affections of the mucosa seem to be the rule in acute cases.

Two pigeons were inoculated December 3 with a liquid culture from the spleen of pig No. 97. No. 1 received about $\frac{1}{2}$cc under the skin of the right shoulder. No. 2 received about $\frac{1}{2}$cc in the same place and in addition 1cc beneath the skin near the keel of the sternum. No. 2 died within twenty-four hours. There were no lesions perceptible excepting a deeper red of the pectoral muscle at the point of inoculation. Cover-glass preparations of spleen, liver, and kidney negative. As might have been expected from such a large dose, the bacterium was present in the viscera and blood, as determined by pure liquid cultures of blood from heart and liver tissue. No. 1 appeared ill on the following day. It remained quiet on its perch with feathers ruffled, feces entirely white until December 8, when blood was passed mixed with mucus. This condition lasted until December 12, when it was found dead. There was no somnolence noticed at any time, and symptoms pointing to an implication of brain and spinal cord were absent.

On examination, the right pectoral muscle appeared as if the blood had been soaked out and the muscle boiled. Its consistence was that of boiled flesh. This condition prevailed over the major part of the pectoral muscle for a depth of about three-fourths of an inch. Liver dark and very soft; spleen and lungs normal in appearance. The large intestine for a distance of about 6 inches from cloaca appeared distended and covered with yellowish spots about one-eighth of an inch in diameter. The greater part of the mucous surface was covered with a dark brownish necrosed layer interspersed with yellowish masses. Cover-glass preparations of the spleen, liver, and lungs contained large numbers of the oval bacterium; very few in blood of heart and in kidney. Two cultures in tubes of nutritive gelatine, one inoculated with blood from the heart, the other from the liver, showed the characteristic growth of the bacterium after two days. The colonies were very numerous and crowded in the culture from the liver; few and scattered in that from the blood. Two tubes of meat infusion peptone inoculated, one from the liver, the other from the blood, were found pure cultures of this motile bacterium when grown on gelatine plates.

On November 27 two pigs were inoculated by a subcutaneous injection of a liquid culture made from the spleen of pig No. 96, and found to consist of only one kind of microbe, when tested by line cultures on

gelatine plates. The microbe was motile, grew on gelatine like that isolated from previous cases, and was presumably the microbe of swine-plague. The culture medium consisted of a sterilized infusion of beef with 1 per cent. peptone. About 1.5^{cc} were injected into each thigh. On December 5 the temperature of one of the animals (No. 114) was 103$\frac{3}{8}$° F. Bowels somewhat loose at first. Appetite good until death, which took place between 9 and 12 a. m., December 6, about nine days after inoculation.

The examination was made December 7, a temperature below freezing preventing *post mortem* changes. The superficial inguinal glands were found considerably swollen, the section dotted with red points and lines. The spleen was somewhat enlarged and darker than normally. The right heart distended with dark, imperfectly coagulated blood. On both auricular appendages a number of well marked extravasations, some the size of a pin's head; on endocardium of left heart a few, not larger then mere points. Lungs œdematous, and of a pale reddish hue, especially marked along the edges of the lobes. Bronchial glands enlarged, of a dark red color throughout. The glands at the root of the mesentery and about stomach very large and confluent, of a mottled appearance. On section the medulla hyperæmic. On tearing apart the coils of the large intestine the glands of the meso-colon appeared as purplish red bean-shaped bodies gorged with dark blood. Beneath the serous coat of the cæcum at its very tip were numerous punctiform extravasations. The kidneys were severely inflamed. On the surface of both numerous punctiform extravasations. On section, the pyramids, including the tips of the papillæ, of a dark red color. The cortical portion dotted with innumerable dark red points. The lymphatic glands in the abdomen itself were of the same purplish color. On examining the mucous membrane of the intestinal tract, a large deeply reddened patch of mucous membrane was found on the greater curvature of the stomach. The small intestine seemed intact excepting near the ileo-cæcal valve where the longitudinal folds were of a dusky red brought about by aggregations of minute dark red points. A similar condition prevailed throughout the large intestine, giving the entire surface a dark appearance. In many places small, blackish ecchymoses indicated hemorrhages on the surface. The kidneys in this animal seemed to have suffered most severely, next to the large intestine, which in all our examinations was obviously the seat of the severest lesions.

Cover-glass preparations of the spleen, kidney, and liver, examined immediately, revealed the same microbe which had been introduced into the system.

Cultures in tubes of gelatine from blood of the heart and spleen resembled precisely the pure cultures from previous cases. As usual, the colonies in the culture of the blood were few and scattered; those in the spleen culture were innumerable in each needle track (Plate III, Fig. 3). Two liquid cultures inoculated with blood from the heart and one from the spleen were tested as above and found pure, containing only the motile bacterium.

The second pig (No. 112), inoculated with the same culture and in the same manner as No. 114, died in the morning of December 12. The temperature first rose to 105$\frac{3}{4}$° F. on December 8; diarrhea set in on December 10; it was found dead on the morning of December 12. The lesions closely resembled those of No. 114, with the following differences: The spleen was much enlarged, gorged with blood, and very friable; on one border there were prominent red points, giving it a ragged appearance; numerous ecchymoses beneath the endocardium of the left ventricle;

on the surface of the lungs numerous dark red spots corresponding to hepatized lobules. These (about one-fourth of an inch in diameter) were found throughout the lung tissue. The kidneys, though congested, were not so seriously affected as in No. 114. For about 4 inches from valve the summits of the folds of the mucosa of ileum were deep red, consisting of aggregations of red points. A large patch of mucosa in the cæcum purplish. The large intestine in general congested and covered with dark red points. No ulceration. The enlargement of the lymphatics, and inflammation of stomach as in preceding case but more severe, the mucosa of the greater portion having almost a black color, due to extravasation. Cover-glass preparations of the spleen contained but few specimens of the bacterium of swine-plague. One cover-glass preparation each of an inguinal gland, hepatized lung, blood from heart and liver negative. Two gelatine cultures, as well as two liquid cultures, grew precisely as those of No. 114 and preceding cases; the liquids were found pure cultures of the motile bacterium, as before. We had thus produced the disease from liquid cultures in two pigs and had obtained from each pure cultures of the bacterium, which had been introduced into the system. After inoculating Nos. 112 and 114 a third healthy check-pig (No. 111) was placed in the same pen. This animal remained well for two weeks after the death of the second animal, when it began to show signs of disease. It died December 31, more than a month after being penned with Nos. 112 and 114. The autopsy demonstrated swine plague with extensive ulceration of the large intestine and implication of the lymphatic glands, lungs, and stomach. No bacteria were found in three cover-glass preparations of the spleen. This animal, therefore, remained well until infected by the two inoculated ones. It is evident that no check animal will remain ultimately intact, owing to the manner of infection, and hence this must not be looked for in experiments with swine-plague.

December 16, 2 guinea-pigs, female, were inoculated from the second liquid culture of the spleen of pig No. 114. No. 1 received $\frac{1}{3}^{cc}$ into each thigh, No. 2, $\frac{1}{3}^{cc}$ into one thigh. Both were sick on the following day, crouching together and breathing heavily No. 1 died December 18, at noon; No. 2, some time during the night.

In both animals there was a considerable enlargement of the thighs inoculated, and of the surrounding parts. This was especially noticeable in No. 2 when the inoculated side was compared with the other. There was also a bluish discoloration of the skin, extending to the vulva and to the mammæ. In both a sero-sanguineous effusion extended from the place of inoculation in the subcutaneous tissue as far as the thorax. The muscles of the thigh were infiltrated with blood. The vessels of the skin were greatly distended, forming a deep red, arborescent network. The skin itself as well as the fatty tissue was discolored by extravasations. The abdominal wall was penetrated by blood extravasations, especially marked on the serous surface. In No. 1 this condition prevailed on both sides of the body. A coil of intestine lay in contact with the abdominal wall which was covered with extravasations; the vessels of the mesentery of this coil appeared like broad streaks of blood. The bacteria had without doubt penetrated the abdominal wall, and invaded the vessels of the contiguous mesentery. In No. 2 only that side of the body which received the injection was affected. The lymphatic gland of the opposite groin was already invaded, however, as shown by a deep red color of the gland and a paler red of the surrounding layer. A few vessels were found on the same side with spindle-shaped enlargements. In both animals the lungs were distended, and on section much

reddened. Right heart distended with a dark clot; coronary vessels very full.

In cover-glass preparations of No. 1 the bacteria were found very abundant in the subcutaneous effusion and in the kidney, less abundant in liver and spleen. In No. 2 they were found in large numbers in the effusion and in the spleen; they were moderately abundant in the liver, kidney, and lungs.

From the above it would seem that guinea-pigs are highly susceptible to the virus of swine-plague, though quite insusceptible to that of *rouget*, as shown by foreign investigations. A very small amount of the virus might have shifted the disease to the internal organs and produced less extensive lesions near the point of inoculation. The dilation and rupture of blood vessels seems to point to a rapid multiplication of the bacteria within them.

The lesions may possibly suggest the presence of malignant œdema to which guinea-pigs are very susceptible. The absence of the bacilli of this disease, however, and the enormous numbers of the bacteria of swine-plague present in the subcutaneous effusion effectively contradict this supposition.

The cultures made from these two animals were all successful. One in a tube of gelatine from the blood of the heart and liver of No. 1 showed the minute colonies in the needle track in two days. They were exceedingly numerous in the liver, few in the blood. Three cultures in liquid media from the spleen, liver, and blood respectively were tested on gelatine plates and found to contain the motile bacterium inoculated. From guinea-pig No. 2 gelatine cultures from the kidney and liver respectively, and liquid cultures from the liver and blood of the heart were tested as above and found pure.

Three mice were inoculated at the same time with the same culture. No. 34, quite small, received two drops; No. 35, four drops; No. 36, six drops. No. 34 was dead the next day. No. 36 died December 22; spleen very large, containing the introduced bacterium in large quantities. No. 35, active December 28; this one had been inoculated with some tissues from swine plague about six weeks previous.

On the following day, December 17, 2 fowls, Nos. 16 and 17, were inoculated from the same culture. Each received 1^{cc}, one-half on each side of the keel of the sternum subcutaneously. Both were well on December 26. When killed on that day, the site of inoculation on the inner surface of the skin was deeply reddened by an injection of the smaller vessels. On the surface of the pectoral muscle, the injection was not so intense. In one case the surface of the muscle was dotted with punctiform ecchymoses. The deeper portions of the muscle were not affected. The reaction in the birds was quite severe, and suggests the local multiplication of the injected bacteria to a considerable extent. Two pigeons (Nos. 3 and 4) were inoculated December 10 with a culture, about forty-eight hours old, in beef infusion peptone, from the spleen of pig No. 114. No. 3 received $\frac{1}{3}^{cc}$ subcutaneously near the keel of the sternum. No. 4 received $\frac{1}{3}^{cc}$ in the same place and an equal quantity near the right shoulder. No. 3 showed no signs of illness for three weeks after. No. 4 became ill within a day after inoculation. Its feathers became ruffled and it remained very quiet. It seemed to have recovered December 23, when it was killed for examination. At the site of both inoculations large sequestra, about 2^{cm} long and 1^{cm} thick, were found imbedded in the pectoral muscle, consisting of necrosed muscular tissue. They were grayish and separated from the living tissue by a tough, whitish membrane. Both were readily removed.

In this experiment both birds resisted successfully, the one receiving the larger dose being made sick for a time.

Two additional pigeons (Nos. 5 and 6) were inoculated December 21 with a liquid culture, about nine days old, from the spleen of pig No. 112. No. 5 received 1^{cc}, one-half being injected subcutaneously on each side of the keel of the sternum. No. 6 received one-half of this dose in the same manner. No. 5 was found dead next morning. Cover-glass preparations of the spleen and liver contained no bacteria, the time being too brief for their abundant multiplication in the various viscera. No. 6 became slightly sick the next day. On December 27 its feathers were very much ruffled and its head drawn in. The bird was killed with chloroform December 28. When the feathers were removed, the crop was found entirely empty, the animal quite emaciated. There was a large tumor on each side of the sternum at the place of inoculation and confluent over its anterior portion. Beneath the skin each appeared as a triangular yellowish white elevated area about 2^{cm} square; on section it extended from 1^{cm} to 2^{cm} into the pectoral muscle. This mass of muscular tissue appeared as if boiled, resembling that of pigeon No. 1 exactly. Of the viscera, the liver and kidneys were gorged with blood, especially the latter. The lower portion of the intestinal canal, examined with a lens, was found injected and dotted with numerous dark red points. It is very probable that if the animal had been allowed to live the intestine would have presented the same appearance as that of pigeon No. 1. Cover-glass preparations of the internal organs were in general negative, as far as regards the active multiplication of the organism. Liquid cultures of the liver, kidney, and blood from the heart, when tested on plates of gelatine, contained the motile bacterium of swine-plague. Cultures from the changed pectoral muscle were equally successful. The culture from the liver contained in addition a microbe having on gelatine a very active surface growth, contrasting markedly with the growth from the three remaining cultures which were pure. In this bird, the local reaction, which was very severe, evidently acted as a barrier to the invasion of the microbes. They were too few in the internal organs to be detected in cover-glass preparations, while the culture test proved adequate to demonstrate their presence.

On December 5, 2 pigs (Nos. 121, 140) were inoculated with a pure liquid culture, about seven days old, from a superficial inguinal gland of pig No. 97, each receiving about 3½^{cc} of the culture liquid. On December 10 the temperature of No. 121 rose to 107½° F. It was found dead quite unexpectedly on the morning of December 12, having eaten heartily the evening previous. To summarize briefly the *post mortem* appearances: The lymphatics of thorax and abdomen were much swollen and congested in both cortical and medullary regions; ecchymoses on auricles of heart; lungs somewhat congested with numerous small foci of a dark hepatization. Lung worms present. Both kidneys resembled those of No. 114, the cortical portion enlarged, congested, and on section dotted with closely set deep red points, papillæ pale. Spleen swollen, filled with blood, friable. Along greater curvature of stomach, a small portion of the mucosa was covered with small extravasations. The small and large intestines contained a chocolate-colored semiliquid mass, evidently blood. On the valve a clot was firmly attached, but on removal the mucosa was pale; no extravasation or ulceration present.

In this case the kidneys and lungs seemed to have suffered most, if we exclude the lymphatic system.

Cover-glass preparations of the spleen showed the oval bacterium in large numbers. In two liquid cultures of the spleen the motile bacterium only was present. A gelatine culture of the spleen showed in each needle track the innumerable minute colonies of the same bacterium.

No. 140 had a temperature of 107½° F., December 10. Eyes inflamed. It died December 18 quite unexpectedly, after having improved slightly a few days previous. The autopsy revealed a very severe case of swine-plague. It differed from the preceding case in the presence of extensive ulcers of the large intestine, accompanied by similar ulceration of the ileum for about 2 feet from the ileo-cæcal valve. The lungs were congested and hepatized anteriorly. The kidneys and lymphatic glands, generally, were also involved. Cover-glass preparations of the spleen contained the characteristic bacterium. A gelatine tube culture from the same organ gave the characteristic minute colonies in large numbers. The check pig (No. 122) placed with this pair on the day of inoculation died on the same day with No 140. It had probably been infected by No. 121, as it had succumbed very suddenly, and the autopsy revealed a very acute case of swine-plague of the hemorrhagic type. Lungs, intestines, and lymphatic glands were severely diseased; ulcers had not yet formed. The spleen contained the oval bacterium in abundance, as shown by cover-glass preparations and a culture in gelatine.

With the same culture which had been injected into pigs Nos. 121 and 140, 2 fowls were inoculated on the same day, December 5. Each received ½^{cc} of the culture liquid beneath the skin on each side of the keel of the sternum. Both fowls remained under observation for two weeks without revealing any symptoms of disease.

On November 28, 2 pigs, Nos. 98 and 99, were fed with the intestines of No. 97. No. 98 had been at the station nearly six weeks apparently well. The temperature, at the time of feeding 102½°, rose to 107⅝° F. November 30, but fell to 104½° December 3. December 5 the animal began to fail very rapidly, and died during the night. On examination no discoloration of the skin; superficial inguinal glands enlarged, slightly congested. A moderate quantity of straw-colored serum in abdominal cavity. A few punctiform, bright red elevations on spleen. Serum in pericardial cavity; a few punctiform and patchy extravasations on each auricular appendage; right heart distended with dark, partially coagulated blood. Bronchial and mediastinal glands very dark red throughout; lung worms in both lungs. On the greater curvature of the stomach, a large patch of the mucous membrane of a bright red color; glands of mesentery very much swollen, of a mottled red and pale color, both on surface and on section. About 12 inches from the ileo-cæcal valve, the serosa of several coils of the small intestine dotted with bright red points; the mucosa of the corresponding coils reddened in patches. The glands between the coils of the large intestine of a dark purplish red. The cæcum and neighboring portion of large intestine closely studded with superficial ulcerations of varying size, some yellowish, others with a jet black center surrounded by a yellowish border. This center probably represents the remains of the blood extravasation leading to the ulceration. In cover-glass preparations of the spleen and liver, the same oval bacterium was present in moderate numbers. In a gelatine tube culture, each of blood from the heart and of the spleen, the characteristic colonies appeared very numerous in the spleen and moderately so in the blood. Liquid cultures from the same sources found to

contain the motile bacterium only, and to have the characteristic growth on gelatine.

In case of No. 99, the temperature likewise rose to 107½° F. on November 30. It died on December 7. The lesions resembled those of No. 98, with the following exceptions: In the left side of the abdominal cavity a large clot of blood was found beneath the peritoneum, extending from near the diaphragm into the pelvis and representing probably 300cc of blood. The left kidney was entirely imbedded in it. The place of rupture could not be found, owing to the firmness of the clot. Both kidneys pale. Glands of the intestinal tract prominent but very pale. In the stomach the food there present was encased in a dark coagulum. The hemorrhage probably came from the base of the folds at the fundus, where the mucosa was very dark red. In the cæcum and large intestine the mucous membrane was studded with jet-black pigment patches collected into lines and groups. The valve was covered with these ecchymoses showing signs of ulceration. This condition prevailed throughout the large intestine; the rectum seemed intact. Echinorhynchi in small intestine. The oval bacterium found on cover-glass preparations of the spleen in moderate quantity. Two cultures in tubes containing gelatine were prepared, one from blood taken from the heart, the other from the spleen. In forty-eight hours a small number of whitish points were present in the blood culture. In that of the spleen, however, each needle track contained a large number of these minute colonies. In addition to these there were, in all, five colonies distinguished from the rest by their large size. Two cultures in meat infusion peptone inoculated with blood from the heart, when tested on gelatine plates, were found pure. A liquid culture from the spleen gave different results. The line on the gelatine plate along which the bacteria had been sown was visible as a white line in twenty-four hours, while the colonies of the bacterium of swine plague do not appear within forty-eight hours after sowing. The surface growth especially was quite vigorous, enlarging within three to four days into an irregular whitish band. The microbe resembled that of swine-plague, but was larger and stained more deeply. The liquid culture itself, when re-examined, was covered by a brittle membrane. The tube culture in gelatine demonstrated that the strange microbe was present in very small numbers in the spleen itself. This illustrates very clearly how one method of culture acts as a check on the other, and how each contributes something to the determination of the truth. The presence of another organism in the spleen need not be very surprising when we consider the severe hemorrhage mentioned above.

Two pigs, Nos. 107 and 108, were allowed to feed December 9 upon the stomach and intestines of No. 99. No. 107, after showing symptoms for about a week, was found dead December 18. No. 108 lingered until December 21, when it was found dead. In No. 107 there were a few ulcers in the cæcum, and a large area of inflammation in the stomach. The lymphatics in general were swollen, and gorged with blood. Extravasations on auricles of heart. The autopsy of No. 108 revealed a more extensive ulceration and inflammation of the large intestine. The lesions elsewhere were similar to those of No. 107. In the spleen of both animals the characteristic bacterium was found. No cultures made.

In the evening of December 5, 2 pigs, Nos. 120 and 145, were fed with four liquid culture of the bacterium of swine-plague, and next morning with five additional cultures. These had all been tested on gelatine plates and found pure cultures of the same microbe. The

source of these cultures were pigs Nos. 96 and 97, and the rabbit and mice inoculated therefrom. The cultures were mixed with dry feed and were in this way readily consumed. December 10, No. 145 was somewhat dull, and had slight diarrhea, continuing until death, which occurred rather suddenly between 5 and 6 p. m., December 12, as it had eaten heartily in the morning. It was examined early the next day. No distinct discoloration of the skin; superficial inguinal glands tumefied and slightly reddened. In the abdominal cavity, the peritoneum covering the intestines was faintly reddened, the vessels of the omentum distended and bright red. A small quantity of straw-colored serum present. The surface of the liver was covered with bluish-gray patches. The medulla of kidney, including tips of papillæ very dark red; spleen dark, slightly enlarged; vessels of surface of heart very much distended.

In the stomach the mucous membrane of the fundus was, as usual, a very dark red color. The severest lesions, however, and such as we had not seen before, were found in the ileum and large intestine. For about 3 feet from the valve the entire mucosa of the ileum was necrosed, stained yellowish, and could be scraped off with the scalpel. The cæcum appeared as if macerated; the mucous membrane came away *in toto*. In the lower part of the large intestine the complete necrosis was gradually replaced by a dark red membrane dotted with yellowish ulcers about one-quarter of an inch in diameter and not more than one-half an inch apart. Finally, in the rectum, ulceration was absent. The affected intestine was so much thickened that it failed to collapse when cut open and contents removed. In this case the local effect of the ingested bacteria had been tremendous, overshadowing the lesions of the remaining viscera. Even the lymphatic glands, almost invariably and severely diseased in the preceding cases, were but moderately inflamed. Those of the mesentery, however, were very much enlarged. The other animal, No. 120, died one day later. The temperature was but slightly elevated until December 12, when it reached 108° F. Great debility supervened until death, December 14. In this animal superficial inguinal glands were found enlarged, the cortical portion gorged with blood. Spleen enlarged, dark, friable. A few ecchymoses on endocardium and epicardium. Isolated lobules of the lungs dark red, hepatized, showing here and there extravasations under the pleura. Both kidneys much swollen, surface dark red; numerous extravasations under the capsule. On section the cortical portion dotted with closely set dark points, medullary portion also congested. Lymphatic glands of mesentery very large, those of meso-colon gorged with dark blood. The mucosa around the pylorus and on its valve colored deep purple, the inflammation extending for some distance into the duodenum. The mucosa of the small intestine (containing a few specimens of *ascaris*) was not diseased, except near the ileo-cæcal valve, where a small area was covered with punctiform extravasations. The cæcum and upper third of the large intestine were the seat of extensive ulceration. The yellowish superficial ulcers were very numerous, leaving but little of the deeply congested, purplish membrane exposed to view.

In this animal the effect of the bacteria was far less corrosive, but the inflammation of the kidneys and lymphatic glands more severe. On cover-glass preparations of the spleen of both of these animals, the characteristic bacterium was found—far more abundant in the latter case, however. In these cases, therefore, the feeding of pure cultures was sufficient to bring about a most severe type of the disease. A gelatine tube culture, each of blood from the heart and from the spleen, from both animals proved pure. Likewise four liquid cultures from the same

sources, each contained the motile bacterium only; all grew alike on plates, the colonies identical with those of preceding cultures.

On December 19, 2 pigs (Nos. 76, 118), were fed with about 30^{cc}, each of various pure liquid cultures from six to ten days old. Five of them were from the spleen of pigs, one from a mouse. For a few days after December 23 the bowels of No. 118 were loose, and the animal was dull and off its feed; thence it continued to improve. It was killed January 7, when apparently well. The only evidences of disease were a moderate enlargement of lymphatics of abdomen which contained a considerable quantity of straw-colored serum. In the lungs, which were in general of normal consistency and color, there were numerous punctiform foci of a dark red color. The cæcum and colon contained no ecchymoses or ulcers; membrane pale. The walls, however, were very much thickened, so that they scarcely collapsed when cut open and emptied. This feature recalled the condition of the colon in No. 145, which had been fed with cultures, and in which the great thickening was accompanied by complete superficial necrosis. Spleen evidently free from bacteria, as shown by one culture, and cover-glass preparations. It is highly probable that the thickening of the intestine was due to the ingested cultures, and that the animal was quite insusceptible.

No. 76, an old animal which had failed to take the disease before when exposed to it, remained unaffected after the feeding.

Quite different from most of the cases described was that of No. 89, exposed November 5 to the disease with those vaccinated with Pasteur's attenuated virus. It presented no very marked symptoms of disease excepting a slight elevation of temperature. November 23 both eyes became inflamed; it moved about with difficulty, and on December 5 it was evidently dying, so that it was thought best to kill it, which was accomplished by a blow on the head. The skin of the abdomen was covered with brownish, papery scales, which came away readily, exposing a perfectly clean, white skin. The superficial inguinal glands were very large, pale, and infiltrated with much serum. Spleen dotted with a few red points. Liver pale, on its surface small yellowish patches here and there. They cut like cartilage, and formed the walls of small cysts containing a soft, brownish pulp. Small portions of the lungs converted into a dull red, hepatized tissue, probably due to the presence of numerous lung worms. Heart normal. Lymphatic glands of mesentery and meso-colon very large, but pale and tough. Stomach and small intestine apparently normal. About one-half of the large intestine, including the cæcum, was studded with yellowish ulcers closely resembling those depicted on Plate I.

This case corresponded closely with those which had come under our observation for more than a year past. All inflammatory processes had apparently subsided, leaving nothing but the extensive intestinal ulcerations as witnesses of the former presence of the disease. Even the mucous membrane surrounding the ulcers was pale, so that any one unacquainted with the lesions of acute, fatal cases might infer that the disease in general was a purely local one, attacking the mucous membrane at the place of ulceration. It is highly probable, also, that in such cases the pathogenic microbe has been eliminated or has given way to other septic microbes which, gaining admission through the intestinal ulcers, may live, if not multiply, within the body. The spleen which furnished us quite invariably with pure cultures from the acute cases described above, and which, according to cover-glass preparations and gelatine cultures, contained the bacterium in abundance, failed in this case. Two liquid cultures, inoculated with a platinum wire plunged into the

parenchyma, remained sterile. A third tube, into which a small piece of the spleen tissue had been dropped, likewise remained clear. It is evident that if even a single germ had been present one of the tubes would have been clouded. It is needless to add that cover-glass preparations of spleen tissue were equally negative. Three mice inoculated with a bit of the same organ were active three weeks later.

Among those cases in which swine-plague was definitely made out on *post mortem* examination may be mentioned No. 88, which was exposed to the disease with No. 89 November 5, and died November 16. Cover-glass preparations of the spleen revealed the presence of numerous microbes, slightly longer than the bacterium of swine-plague and without the light center. Cultures in gelatine from the spleen and heart's blood grew more rapidly than pure cultures, the surface growth being especially vigorous. Liquid cultures from the blood, when tested by line cultures, showed the characteristic growth of the bacterium of swine-plague; but there were, in addition to these, a few smaller colonies growing like them, so few in number, however, that they were regarded as retarded colonies of the same microbe, their small size excluding a microscopic determination.

On November 27, a mouse which had been inoculated with a bit of spleen from this pig, November 16, was found dead. It had been slightly ill since the inoculation. The eyes were closed, the amount of secretion very slight; the glands of the groin enlarged, serously infiltrated; the acini of the liver were pale and bloodless, its substance very soft; spleen enormously enlarged, reddish, mottled; kidney showed some whitish patches, half as large as a pin's head; on section the medullary portion was deeply congested and well marked off from the paler, cortical portion; both liver and spleen very soft and friable; lungs œdematous, but float in water; they presented, on the surface, impressions of the ribs and very minute interlacing, red lines, as of injected vessels. Cover-glass preparations of the spleen, liver, kidneys, lungs, and blood from the heart all contained the oval bacterium of swine-plague in profusion, the paler center well marked in all preparations. The culture in gelatine from the spleen presented innumerable minute colonies in the track of the platinum wire. The liquid cultures from the spleen and heart's blood both contained an oval, motile bacterium. The cultures were opalescent, without surface membrane. Both found pure when tested by line cultures on gelatine.

On December 2, another mouse, which had been inoculated with the one just described and kept in the same jar, was killed with chloroform. The organs presented the same appearance as the one just described, the spleen also of enormous size. Strange to say, no bacteria were found in any of the internal organs; but a liquid culture of the blood contained the motile bacterium and was pure, as determined by line cultures. This animal had been inoculated sixteen days before. The bacterium of swine-plague, not obtained pure from the pig, was thus isolated by passing through mice. In another case, No. 100, in which the mucous membrane of the cæcum was a single mass of necrosed tissue, and most of the other lesions found in swine-plague were present, cover-glass preparations of the spleen, blood, and a few lymphatic glands were negative. One liquid culture of the blood and two of the spleen remained sterile. A platinum wire dipped into the blood and spleen substance was drawn through layers of gelatine on plates. Not a single colony appeared. The animal penned with the former, No. 101, also died of swine-plague, as shown on *post mortem* examination, but complicated with a localized peritonitis in the region of the liver. The liquid

cultures from the peritoneal effusion and blood grew more vigorously than swine-plague bacteria, and on gelatine the colonies remained very small. In several later attempts at plate cultures, they entirely failed to grow. The microbe resembled that of swine-plague. In both pigs (Nos. 100, 101) the common bile duct was completely occluded and greatly distended by about ten ascarides, extending from the duodenum into the smaller bile ducts. This may account for the peritonitis found in No. 101.

The fact that it is difficult to demonstrate the presence of the bacterium of swine-plague in chronic cases which have lasted more than three weeks, and in which the ulcerations in the large intestine are already far advanced (Plate I), cannot be emphasized too much. In those cases in which the disease leads to a sudden, fatal termination, the bacterium, as a rule, is found abundantly in the spleen. Ignorance of these facts has no doubt led to previous erroneous deductions in investigations on the etiology of this disease. Chronic swine-plague must henceforth be looked upon as an after-stage, independent of the disease itself and caused by intestinal lesions, the indirect result of the growth of the bacterium in the blood vessels of the mucous and submucous tissue. The bacterium has already disappeared from the stage and makes way frequently for other either harmless or septic microbes which gain entrance through the ulcerated membrane, and are found in the blood and serous exudates. An epidemic of swine-plague which broke out among a herd of pigs destined for experimental purposes illustrates the general statement above very well. This epidemic which, most fortunately, appeared after the experiments recorded in the preceding pages had been completed and cast no doubt on the results obtained, was very severe and showed the great mortality in herds in which the disease has gained a foothold. The disease was, without doubt, introduced with the herd, and the lesions found on *post mortem* all pointed to chronic cases of three or four weeks' standing. Of 25 animals exposed to the disease only 2 remained well. All the diseased animals died in periods varying from two to four weeks after exposure. Each case was carefully examined and cover-glass preparation made from the spleen of every animal. Out of 15 animals, only 2 had a few bacteria in the spleen. Of but 3 of these liquid cultures were made, for want of time. These 3 remained sterile. This is very significant when we compare with these latter results those obtained from acute cases. It goes far to prove that the majority of the animals affected with swine-plague die from the sequelæ of the disease, and but few from the direct effect of the microbes multiplying in the blood vessels of the internal organs.

It is hardly necessary to recall once more the important fact that in all these cases no bacillus resembling that found in Pasteur's vaccine, and proved to be the cause of *rouget* on the continent of Europe, ever appeared to us in cover-glass preparations or in cultures. In his first communication on *rouget* Pasteur speaks of the microbe as fatal to rabbits and sheep, but not to fowls. Having satisfied ourselves that it killed rabbits but had no effect on fowls, 2 lambs were inoculated December 31, in each thigh; No. 1 with 2^{cc}, No. 2 with 1^{cc} of a liquid culture from the spleen of pig No. 112, now nineteen days old. On January 3 the temperature of No. 1 had risen to 106½° F. In both there was considerable stiffness in the hind limbs; no desire for food. No. 2 was killed January 13, after having almost recovered. At the places of inoculation small abscesses had formed. The neighboring lymphatics were enlarged. The viscera seemed intact excepting the

spleen, which was dotted with numerous small red patches resembling extravasations. A bit of tissue therefrom contained no bacteria.

The other lamb was also nearly recovered. On each thigh two small abscesses had formed.

A calf was inoculated hypodermically at the same time with 4^{cc} of the third liquid culture from the spleen of pig No. 114. Its temperature rose from 103° to 106° F., which it reached January 2, when a swelling was perceptible in front of the shoulder, where the injection had been made. The temperature slowly fell afterward. The animal was killed for another purpose January 13. The swelling, as large as a hen's egg, was found to implicate the muscular tissue, into which the needle, no doubt, had penetrated. When incised, an irregular cavity was found within the muscular tissue lined with a soft pultaceous mass, arising from the necrosis of the muscle substance. A superficial lymphatic gland near by was considerably enlarged.

THE BACTERIUM OF SWINE-PLAGUE.

In at least twenty-five cases of undoubted swine-plague bits of spleen tissue, when spread out in a thin layer on a cover glass, dried and stained in some aniline color, were found to contain the same microbe in greater or less abundance* (Plate III, Fig. 1). When stained for from one to two minutes in an aqueous solution of methyl violet† and examined with a Zeiss $\frac{1}{18}$ homogenous, they appear as elongated ovals, chiefly in pairs. The greater number present a center paler than the periphery. This may be due to a greater density or staining capacity of the peripheral portion. The darker portion is not localized at two extremities, as in the bacteria of septicæmia in rabbits, but is of uniform width around the entire circumference of the oval. The length of an oval in balsam preparations is about 1.2 to 1.5 micromillimeters; its width, .6 micromillimeter. Occasionally forms are observed longer than this (1.8 micromillimeters) and somewhat more slender; in these also there is a noticeable difference between the central and the peripheral portions in the intensity of the stain.‡

In liquid media the bacterium is *motile*; its movements recall those of *bacterium termo*. When moving to and fro, the pairs of bacteria are apt to revolve about the point of division in such a way that each individual describes the surface of a cone. That it is not *bacterium termo*

*During the past year much time and labor was spent in examining sections made from intestinal ulcers, enlarged lymphatics, and hepatized lung tissue. The ulcers contained, as might have been expected, various forms of organisms. Even in the deeper portions, away from the necrosed regions, no two ulcers were alike, as regards the bacteria found therein. Sometimes micrococci would be found in abundance in the inflammatory infiltration. At other times long slender filaments would fill up the adjacent blood vessels and extend into the healthy area. Ova from the *trichocephalus* were quite constantly found in the base of the ulcer. Some were imbedded among the cellular elements near the edge of the ulcer. Sections of enlarged lymphatic glands showed an engorgement of the lymph sinuses with blood corpuscles. Bacteria were absent. Sections of lung tissue were equally negative or contradictory. As the material examined came from chronic cases the result need not be very surprising, after what has been stated concerning the presence of the bacterium of swine-plague in the spleen in acute and chronic cases. It is our intention to subject the material obtained from acute cases to a thorough microscopic examination, from which better results may be expected.

†The bacterium from liquid cultures, when stained with aniline water, methyl violet, and decolorized with iodine according to Gram, does not retain the stain well.

‡This difference is not an optical effect, for it is only seen after the bacteria have been stained and are examined without a diaphragm. It is well known that large pencils of light efface details of structure and bring out those depending on differences in the intensity of the color.

is proved by the fact that it does not liquefy gelatine, and that not the slightest putrefactive odor is emitted from any culture containing it.

The bacterium, under cultivation, shares with many other bacteria the property of varying slightly in form in different media, and at different periods in the same medium. Cultivated in meat infusion with 1 per cent. peptone for forty-eight hours, the average size of a bacterium was .9 micromillimeter in length and .4 to .5 micromillimeter in width.

In meat-infusion peptone gelatine they are larger than in cover-glass preparations from the spleen. Occasionally a very long filament may be seen lying amongst the ovals and short rods. These vary from .8 micromillimeter to 1.8 micromillimeter in length, and are about .7 micromillimeter broad in cultures forty-eight hours old.

The value of dimensions must not be overestimated. They are at best somewhat variable. The size of a microbe which is constantly undergoing division must vary with the activity of multiplication, which in turn depends on the amount of nutritive material at hand. Hence, in a rich medium, at an early period of growth, microbes multiply faster and the forms are relatively smaller than in less nutritive media, or in such in which the food material is nearly exhausted. This at least agrees with our own observations. In cultures of the swine-plague bacterium in chicken broth, probably the poorest of meat extracts, slender filaments of considerable length are frequently observed. The culture was suspected of being impure, but when tested on plates no difference among the colonies could be observed. Moreover, these forms had an abnormal appearance never seen in vigorously growing bacilli. They often bore dilations and constrictions, and their extremities were poorly defined. They were also characterized by very sluggish movements.

In all cultures we have determined their purity not by one but by several characters. The most important of these are: (1) the slow growth and *absence* of *liquefaction* in nutritive gelatine; (2) the appearance of the colonies of the bacterium on gelatine plates; (3) its form and *motility* in liquid media.

In neutralized liquids, such as extracts or infusions of beef, with or without peptone, the bacterium multiplies very rapidly, so that tubes, inoculated with a minimum quantity of blood, &c., containing it, are invariably turbid on the following day. This turbidity is greatest in liquids rich in nutritive matter, such as those containing peptone. In simple meat extracts the liquid remains merely opalescent. On shaking the tube, a considerable flaky deposit is seen in a few days after inoculation. There is at no time a distinct membrane observable on the surface of the liquid, although, when tubes remain very quiet for a time, a narrow whitish ring is apt to be deposited on the glass at the surface of the liquid. This band, consisting solely of bacteria, is sometimes entire, sometimes limited to a small portion of the circumference of the tube. It is densest in neutralized meat infusion to which 1 per cent. of peptone has been added, and appears in the form of whitish, downy masses which are readily shaken down into the liquid. On the surface no confluent membrane forms, but occasionally a small patch resembling the band just described is seen floating on the surface of the liquid. This band cannot be homologized with the membrane formed by other bacteria, such as that of *bacillus subtilis*, since it is not constantly present and forms only after several days or a week. It must be looked upon merely as a deposit of the bacteria similar to that formed on the bottom of the tube at the same time.* At the end of two or three weeks the sediment consisting

* We have lately observed in a few tubes which stood undisturbed for over a week, a more or less complete surface membrane, composed of very brittle fragments.

entirely of very short rods or ovals, does not stain well. Only a narrow line of color indicates the outlines of the individual microbes. It might be claimed, with Klein, that these are spore-bearing forms. This, however, has not been confirmed. On the other hand, our experiments on the thermal death point, given below, oppose this view.

When sown on gelatine plates, either scattered or in lines, the colonies may be detected with a low power after forty-eight hours. They are nearly spherical, with pale disk and sharply defined margin. In another day they are visible to the naked eye as mere points. Examined with a 1-inch objective, they appear irregularly oval, egg-shaped or spherical. The margin is a well-defined dark line, the disk brownish in color with transmitted light (Plate III, Fig. 2, *a*). When growing on the surface, the colonies appear as patches, somewhat refrangent (Plate III, Fig. 2, *b*). The center being elevated, the whole forms a very flat, irregular cone. The border of the colony is irregular, very thin, and pale.

While examining liquid cultures by sowing them in lines on gelatine plates, we observed in every line a few, very faint, cloudlike bodies, which were evidently situated near the lower surface of the gelatine, or between it and the glass. These colonies (Pl. III, Fig. 2, *c*, *c'*, *c''*) were much larger than the spherical forms, the center slightly opaque, and margins gradually vanishing. We at first suspected the presence of another microbe, but when examined microscopically they resembled the bacterium which was in the majority. Yet this method was not satisfactory, since it was difficult to get access to the deeply buried colony. Finally we came to the conclusion that the bacterium of swine-plague grew in this way when deposited on the glass. To prove this, we dried thin layers from a liquid culture upon glass plates, and poured the gelatine upon them. In forty-eight hours we found the plates covered with these pale, nebulous colonies; only a very small number were round. As the film had not been thoroughly dry, some bacteria may have worked their way into the gelatine and there developed into spherical colonies.

There is another feature of the nebulous colonies which suggested to us the identity of the two forms of growth. In Fig. 2, *c''* a nebulous colony is drawn, with a spherical form above but communicating with it. At first sight the spherical form seems to have burst and discharged its contents, which represent the nebulous form, the true explanation being that the same colony grows up into the gelatine and laterally over the glass. Fig. 2, *c'* represents another form of colony very frequently observed, in which the connection between the two parts does not appear, but undoubtedly exists below. Owing to a lack of time, it has not been possible for us to see whether other microbes which do not liquefy gelatine grow in this way on plates. Whether they do or do not, the matter is quite important, and it seems that in future the morphology of colonies, not only within the layer of gelatine and on its surface, but also under it, must be studied, if this method is to be continued as a means of testing the purity of cultures and determining species.

In tubes containing nutritive gelatine, these bacteria appear in the form of very minute colonies within two or three days, which enlarge but slightly beyond mere specks (Plate III, Fig. 3). A very thin, whitish, glistening layer is usually present on the surface of the gelatine at the point of inoculation, limited to about a millimeter in its surface extension. These minute colonies invariably appear in those cases in which

the presence of the swine-plague bacterium was determined from cover-glass preparations, and their appearance was alike in all respects. When the culture contained also other bacteria, these usually multiplied more rapidly in the needle track, and the colonies resulting therefrom stood out as large as pins' heads among mere points. The surface growth was then, as a rule, more vigorous, and thick, whitish layers were formed.

When much crowded the colonies of the bacterium of swine-plague remain quite small, while those that are scattered grow considerably larger. They do not exceed half the size of a pin's head even under the most favorable circumstances. This is readily seen in each tube culture, in which the lowest point of the needle track contains only isolated colonies, while near the surface they are fused into a single mass. This fact must also be borne in mind in estimating the purity of cultures, as it is obviously impossible to subject every section of the needle track to microscopic examination. We have found the colonies from the blood almost invariably larger than those from the spleen, chiefly because they were always few in number, and also because a small quantity of blood was introduced upon which the bacteria seem to thrive much better than upon the nutritive gelatine.

A few additional facts may be mentioned which need further investigation, however. In *milk*, sterilized by discontinuous boiling, the bacterium multiplies without producing any change in the appearance of the milk itself. Two cultures kept for three weeks remained unchanged. When sown on plates the well-known colonies grew as usual, and were as abundant as in beef-infusion peptone. In two tubes, containing, respectively, 3 and 1.8 per cent. of non-neutralized Liebig's meat extract, the bacterium multiplied rapidly and abundantly. This extract has an acid reaction. The bacterium of swine-plague, therefore, unlike that of *rouget*, is not limited to slightly alkaline media, but may grow in those that contain a small portion of acid as well.

On *boiled potato* the bacterium grows very well. It seems to be a far better substratum than beef-infusion peptone gelatine. The bacterium manifests growth by first staining the white, cut surface of the potato at the place of inoculation with a chocolate color, gradually turning quite dark and spreading over the entire surface. In the latter stage it resembles the discoloration frequently observed on boiled potatoes standing for a day or two. The growth itself begins in the form of small round masses, which gradually unite into a patch $\frac{1}{2}$ to 1^{mm} thick. This patch spreads slowly by lateral extension, and its straw-colored, slightly greenish surface contrasts strongly with the dark, bluish-red background of the potato. This description applies to growth at a temperature of 65° to 80° F. In the incubator, at 95° to 100° F., the multiplication was more rapid and abundant.

It grows well in liquid and solid blood serum sterilized by discontinuous heating at 58° C. In the latter medium its growth remains limited to the track of the needle, forming there a cylindrical body not more than 1^{mm} thick after a number of weeks. The lower, free end of this slender plug is somewhat enlarged into a knob. On the surface of the serum it spreads out as a very thin, whitish layer. No liquefaction takes place.

Thermal death point of the swine-plague bacterium.—Four tubes were exposed to a temperature of 58° to 60° C. for about two hours. They contained liquid cultures varying in age from one to four weeks. When fresh tubes were afterward inoculated from these, three remained sterile, the fourth contained a bacillus. It was evident from this that the bac-

terium had been destroyed. The presence of the bacillus may be accounted for by the water of condensation formed in the upper portion of the tube during the heating which had washed down some spore. This experiment having been made for another purpose, the death point was again determined as follows:

Two tubes each of nutritive liquid (one meat infusion with ½ per cent. sodium chloride, the other, meat infusion with 1 per cent. peptone) were inoculated from four pure liquid cultures from differentanimals, and one, two, three, and four weeks old, respectively. Before inoculating the tubes they were raised to 58° C. After inoculation they were exposed, four at a time (one from each culture), to the same temperature for ten minutes, then cooled off quickly in cold water. Seven tubes remained permanently clear, the remaining one, from a culture three weeks old, became turbid on the fourth day and contained the bacterium which was introduced.

The thermal death point must, therefore, be set down at about 58° C. The fact that the cultures of all ages, from one to four weeks, succumbed at this temperature demonstrates the absence of any resistant spore state, such as that found in *bacillus subtilis* and *bacillus anthracis*.

It is a very important point to determine whether the virulence of pathogenic bacteria is lost during artificial cultivation. To determine this point the following experiment deserves to be recorded:

A culture in beef-infusion peptone made December 7 from the spleen of pig 114 was used to inoculate a potato December 21, on which it grew at a temperature of 65° to 80° F. quite luxuriantly. January 6, one month after the microbe had been taken from the body, a liquid culture was again prepared from the material on the potato. On the following day 3 mice (Nos. 37, 38, and 39) received hypodermically seven, five, and three drops, respectively, of this liquid culture. No. 39 died January 10. Bladder greatly distended, hemorrhagic spots over its surface. Slight ecchymosis at the point of inoculation. No bacteria on cover-glass preparations of the spleen. As there was some doubt about this case, no cultures were made. Nos. 37 and 38 were found dead January 14, one week after inoculation. Both had been sick for several days previous. In No. 37 there was a whitish degeneration of the muscular tissue at the point of inoculation, and slight injection of the surrounding vessels. Spleen slightly enlarged, almost bloodless, friable, crowded with the bacterium of swine-plague; kidneys congested and containing the same bacteria in large numbers. In No. 38 the lymphatic glands of the knee-fold were very large; spleen about 1¼ inches long, three-eighths of an inch wide, and nearly one-fourth of an inch thick; very dark. It might have been mistaken for a lobe of the liver, it was so large. The vessels of a part of the mesentery were distended with blood which had infiltrated the tissues for a short distance around them. The bacterium of swine-plague was found in spleen and kidneys; other organs not examined. Lungs in part deeply congested and sunk in water. A liquid culture from the heart's blood of each was turbid next day, with the same bacterium injected.

As mice seemed on the whole more refractory than rabbits or guinea-pigs, we inferred that the virus, though a month old, had not yet lost its original pathogenic power.

A large number of problems remain to be solved concerning the morphology and biology of this organism. One of the most important, without doubt, is that of obtaining a vaccine by reducing the virulence of the bacterium and maintaining it at a certain "strength," as has been done in the case of anthrax, and presumably *rouget*, by Pasteur and his

co-laborers. If this problem shall ever be solved, and it is our intention to undertake it immediately, it must be based upon as large a horizon of facts concerning the life history and physiological activity of the organism as can be obtained by existing methods. We are fully aware that this problem is an exceedingly difficult one. The difficulty is increased by the peculiar character of the disease itself, its communicability among experimental animals, which require the utmost care, in order to be protected from incidental infection. Even when this is exercised the disease will sometimes spring up where least expected.

GENERAL RÉSUMÉ OF THE PRECEDING INVESTIGATIONS.

The earlier work recorded in the preceding pages aimed to determine what relation the bacillus cultivated by Pasteur as a vaccine for *rouget* bore to the disease among the swine prevailing in this country. At that time the bacterium of swine-plague had not yet been seen by us, owing to the fact determined later, that long-standing chronic cases of the disease—the only ones which had come under our observation thus far—were comparatively free from the germ that had produced the disease.

The two vaccines prepared under the direction of Pasteur were carefully examined microscopically, by cultivation and inoculation into mice. The microbe therein contained was a very small bacillus, which grew in a characteristic manner in nutritive gelatine and was fatal to mice. The bacilli were usually found embedded within the leucocytes in large numbers. A number of pigs inoculated with this vaccine were found susceptible to swine-plague, for when placed with diseased animals for a short time, 4 out of 5 contracted the disease and died. In the organs of these animals, not the bacillus of *rouget*, but a peculiar bacterium was found, which was subsequently proved to be the cause of the disease. It is now certain that *rouget* and swine-plague are different diseases, produced by totally different microbes, and that the employment of Pasteur's vaccine is worse than useless, as it not only fails to protect, but may spread a disease which we believe does not exist in this country.

The bacterium of swine-plague proper was found, as a rule, quite abundantly in the spleen of acute, rapidly fatal cases by means of cover-glass preparations. Occasionally it was found by this means in lymphatic glands, while its presence in nearly all viscera was demonstrated in several instances by the more delicate test of cultures. In acute cases the cultures were almost invariably pure, whether liquid or solid media were employed. In long standing cases the cultures remained sterile when the disease was mild. When ulcerations were extensive they were peopled with several kinds of bacteria, whether inoculated from the blood or serous exudates. From such cultures it was very difficult to isolate the specific bacterium, owing to its slow growth on gelatine. From two to six pure cultures of the same bacterium were obtained from about fifteen cases of undoubted swine-plague. Its presence in the spleen of at least ten additional cases was determined microscopically.

The bacterium of swine-plague has been fully described in the preceding pages as to such properties which have been studied. It is a *motile* bacterium, found chiefly in pairs. Each individual resembles an elongated oval about twice as long as broad, the length being about 1.2 to 1.5μ. It is quite easily stained by the aniline colors. It grows readily in neutral, slightly alkaline or acid infusions of meat, with or without peptone; more slowly in nutritive gelatine, which it *does not liquefy*.

It grows very well on boiled potato and blood serum, as well as in milk. It varies somewhat in size when grown in different media. It is killed in liquid cultures by being exposed to a temperature of 58° C. for 10 minutes. Spores are probably not formed. The effect of prolonged drying has not yet been determined.

Of 6 *pigs* inoculated subcutaneously with pure liquid cultures of this bacterium, all died of swine-plague. In 4 of these animals the same bacterium which had been introduced into the system was obtained in cultures from the spleen and heart's blood. The identity of the microbe from the different animals was determined microscopically by culture methods and inoculations. Of 4 pigs fed with pure liquid cultures, 2 contracted the disease in a very severe form. Of the remaining 2, 1 had failed to take the disease when exposed before; the other was sick for a time, but recovered. In those fed, the intestines were most severely diseased; in those inoculated hypodermically, there was in most cases a hemorrhagic inflammation of the kidneys.

A number of pigs were fed with the viscera of those which had died of swine-plague. They all contracted a rapidly fatal form of the disease, and the same bacterium was found in the spleen and blood of these animals which had been obtained from the organs which they had consumed.

Mice proved quite susceptible to this bacterium. In at least 20 which died from inoculation the oval, motile bacterium was found. There is usually some local reaction at the place of inoculation, manifested by a whitish appearance and a soft, friable condition of the tissues involved. A very frequent lesion is the great, at times enormous, enlargement of the spleen, and the enlargement of the glands in the knee-fold. Less frequently the medullary portion of the kidney and the lungs are found deeply reddened. When bits of spleen from swine were placed under the skin of the back, the disease lasted from eight to sixteen days; when cultures were injected, from five to eight days. This difference is, without doubt, due to the difference in the number of bacteria introduced into the system. In some of the animals in which the disease was prolonged, bacteria were present in but small numbers. This may be explained by regarding the animal as having almost overcome the disease. In such cases, moreover, the spleen was exceedingly large, indicating a slow but constant irritation leading to hypertrophy. Only a very small proportion of the animals inoculated with bits of spleen survived, while the cultures were invariably fatal. In a large proportion of cases the bacterium was found in the spleen, liver, kidneys, blood from the heart, and lungs.

In the one *rabbit* at our disposal death occurred about four days after inoculation with the pure culture. The bacterium was shown present in the various internal organs by the microscope and cultures. The only marked lesions were a great enlargement and congestion of the spleen, and hemorrhage in the stomach.

In 2 *guinea-pigs* the virus caused death in three to four days. The chief lesions were an extravasation and infiltration of blood in the connective and muscular tissue about the place of inoculation, slowly invading the rest of the body. The bacterium was evidently multiplying within the blood vessels and rupturing them. The inoculated microbe was present in the internal organs, and very abundant in the local infiltration.

In *pigeons* we have found that 1^{cc} of the culture fluid is almost invariably fatal. With smaller doses there may be a very severe local reaction, terminating in the formation of extensive sequestra, or the microbe

may invade the internal organs. In one case the lower portion of the intestine was extensively thickened and ulcerated. This bird seemed to be on the border line of susceptibility. Four *fowls* were insusceptible; the injection of cultures being followed by slight local inflamation merely.

In the two *sheep* and a *calf* the injection of pure cultures produced abscesses at the point of inoculation, with elevation of temperature.

RESULTS OF LATEST INVESTIGATIONS.

More than four years ago,* in the study of the subject of insusceptibility to contagious diseases, the conclusion was reached that in those diseases in which one attack protects from the effects of the contagion in the future, the germs of such maladies were only able to multiply in the body of the individual attacked because of a poisonous principle or substance which was produced during the multiplication of those germs. And also that, after being exposed for a certain time to the influence of this poison, the animal bioplasm was no longer sufficiently affected by it to produce that profound depression and modification of the vital activity which alone allowed the growth of the pathogenic germs and the consequent development of the processes of disease. After several series of experiments, made at that time with only negative results, it became necessary to suspend these investigations until points connected with them, and which were then obscure, should be cleared up, and until it should become possible to repeat the experiments under more favorable conditions. Our expectations in regard to this important subject have at last been realized by the results of experiments recently made in the laboratory of the Bureau of Animal Industry.

The bacterium which we have lately discovered, and which we believe to be the cause of swine-plague, is killed in liquid cultures by an exposure to 58° C. for about ten minutes.

This method of destroying the bacterium in liquid cultures was resorted to in studying the effects on pigeons of the chemical products (ptomaines?) formed by the bacteria in their vegetative state, and which are probably dissolved in the culture liquid. The heated cultures used in these experiments were always tested by inoculating fresh tubes therefrom, and if no growth followed this inoculation the death of the microbes was considered established.

It had been previously determined that the subcutaneous injection of .75^{cc} ($\frac{3}{16}$ dram) of a liquid culture of the swine-plague bacterium, containing 1 per cent. of peptone, was invariably fatal in the majority of pigeons within twenty-four hours. One-half of this dose was fatal to a few only.

As a preliminary experiment, four pigeons were inoculated December 24, 1885, with a liquid culture that had been heated for two hours at 58° to 60° C. Three of these (Nos. 10, 8, 9) received subcutaneously .4, .8, and 1.5^{cc} of the heated culture, respectively. The fourth (No. 7) received 1.5^{cc} of the pure culture liquid, into which no microbes had been introduced. No. 9, the one which had received the largest dose, was evidently sick the next day, but slowly recovered. The others did not show any symptoms of illness.

January 11, the one which had received a hypodermic injection of the

*Department of Agriculture, Annual Report, 1881-'82, pp. 290-295.

simple culture liquid (No. 7), and the one which had received the largest dose of heated virus (No. 9), received subcutaneously about .75^{cc}, each of a liquid culture five days old, which had been prepared from a potato culture fifteen days old. It is probable that this virus was not so strong, therefore, as a more recent culture from the pig would have been. Both pigeons were sick on the following day. No. 7 died seven days after inoculation. The bacterium of swine plague was found abundantly in the pectoral muscle, in the spleen, kidneys, and liver in moderate numbers.* The other pigeon (No. 9) slowly recovered, but had lost the use of its legs. It seemed perfectly well when killed, fifteen days after inoculation. It was quite fat, the crop filled with food. In the pectorals were found embedded two elongated masses of dead tissue or sequestra about 2^{cm} long and 1^{cm} in diameter, entirely separated from the surrounding tissue by a dense, smooth membrane. In this animal the multiplication of the pathogenic bacteria was purely local, the resistance of the tissues being sufficiently powerful to confine, and finally destroy, the bacteria. The sequestra were made up of dead muscular fiber, which was pale and parboiled in appearance. Each was enveloped by a more or less hyaline homogeneous layer. A liquid culture, inoculated with blood from the heart, remained sterile.

This experiment pointed evidently to an immunity obtained from the chemical products of the bacterium of swine-plague. To confirm this view, another experiment was made.

January 21, 3 pigeons (Nos. 11, 12, 13) received hypodermically 1.5^{cc} of heated culture liquid in which the bacterium of swine-plague had multiplied for two weeks, and was then destroyed by exposure to 58° to 60° C. for several hours. A fourth pigeon (No. 14) was kept as a check. No. 10 which had received .4^{cc} of heated virus December 24, now received a second dose, this time of 1.5^{cc}. For the following three or four days all were somewhat ill, and remained rather quiet, with feathers slightly ruffled.

January 29, when all seemed well, three of the four (Nos. 10, 11, 12) received hypodermically another dose of 1.5^{cc} of heated culture liquid. The other (No. 13) had been fiercely attacked by its fellows, and its head was so injured that it was thought best not to give it an injection at this time, and it was placed in a spacious coop alone. None of the birds seemed much affected by this dose.

February 6, a final injection was practiced upon the four, No. 13 having recovered from the effects of its injuries. The dose was, as before, 1.5^{cc}. All seemed well a few days later.

February 13, one week after the last injection, these birds were inoculated with strong virus, the quantity injected being .75^{cc}, which had hitherto proved invariably fatal, with the single exception of the bird that had been previously treated with heated virus. Those inoculated were Nos. 10, 11, 12, 13, which had received the heated virus, also No. 14, the check pigeon, which had not been touched, and No. 8, which had received a small quantity, .8^{cc} of heated virus, December 24, over fifty days before.

On the following day the check pigeon (No. 14) was found dead; the one which had received the smaller dose (No. 8) was very ill, and died

* In this animal the major part of both pectoral muscles appeared as if they had been boiled; they were whitish, bloodless; the fibers could be easily broken and crushed with the forceps. The muscular tissue surrounding the dead portion was very dark, gorged with blood. The liver was dark in patches; spleen and kidney pale.

before the next day. The other pigeons were perfectly well. The effect of this dose of strong virus, so remarkable on the unprotected pigeons, was even more evanescent than that of the heated virus in which all life had been destroyed.

There can be no doubt, therefore, from this very positive result, that the pigeons had acquired an immunity through the effect upon the tissues of the chemical products formed by the bacterium in the culture liquid.

A table giving the dates of the injections and the quantity introduced into each animal is given below:

Pigeons.	Heated virus.					Strong virus, Feb. 13, 1886.	Remarks.
	Dec. 24, 1885.	Jan. 21, 1886.	Jan. 29, 1886.	Feb. 6, 1886.	Total.		
	cc.	cc.	cc.	cc.	cc.	cc.	
No. 8	.8	.....	.....	.....	.8	.75	Died in 48 hours after injection of strong virus.
No. 10	.4	1.5	1.5	1.5	4.9	.75	Well February 20.
No. 11	.....	1.5	1.5	1.5	4.5	.75	Same.
No. 12	.....	1.5	1.5	1.5	4.5	.75	Same.
No. 13	.....	1.5	.....	1.5	3.0	.75	Same.
No. 14	.....	.....	.....	.....	.....	.75	Died in 24 hours after injection of strong virus.

In the birds that died (Nos. 8 and 14) the pectoral muscles at the place of injection were pale and friable. Necrosis was already at hand. The internal organs were not macroscopically altered, excepting the spleen of No. 8, which was enlarged and dark. The presence of the bacterium of swine-plague in the blood from the heart was demonstrated by liquid cultures, which, inoculated with a minimum quantity of blood, were turbid with this specific microbe on the following day.

The conclusions to be drawn from this experiment, we believe, are of superlative importance to a correct understanding of the phenomena of contagious diseases, and the methods by which these diseases are to be combated. They probably apply to all bacterial plagues of men and animals in which one attack confers immunity from the effects of that particular virus in the future. These conclusions are:

(1) Immunity is the result of the exposure of the bioplasm of the animal body to the chemical products of the growth of the specific microbes which constitute the virus of contagious fevers.

(2) These particular chemical products are produced by the growth of the microbes in suitable culture liquids in the laboratory, as well as in the liquids and tissues of the body.

(3) Immunity may be produced by introducing into the animal body such chemical products that have been produced in the laboratory.

THE DISEASE AS OBSERVED IN SWINE.

Symptoms during life.—The disease may last from a few hours to four weeks in fatal cases. Quite frequently animals will die very suddenly without warning. Some of these cases (pig No. 94) present the hemorrhagic type of the disease very distinctly. In the majority of cases which came under our observation recently, the disease lasted from one to two weeks. The most prominent symptoms are those of great debil-

ity and capricious appetite. In about one-half of the cases diarrhea sets in after three or four days. The feces are usually liquid, at times blood-stained. In those cases where ulceration is extensive, diarrhea is always present. The rectal temperature is usually high, but variable and not at all reliable as a means of determining the intensity of the disease.

Lesions observed after death.—Discoloration or reddening of the skin is quite rare. When present, it is usually found about the genitals in both sexes. The subcutaneous fatty tissue is frequently of a diffuse redness and rarely studded with small extravasations.

The peritoneal cavity usually contains more or less straw-colored serum in advanced cases. In those which die quite suddenly, serous effusions are absent. The coils of the intestines are now and then covered with a few fibrinous, stringy coagula, indicating slight peritonitis. Beneath the serous covering of the intestines extravasations of blood are quite common in very acute cases. They are most frequently encountered on the large intestine throughout its entire length or limited to the cæcum. Occasionally a few coils of the ileum are covered with punctiform ecchymoses. They are found now and then on the stomach. Only once did we see large ecchymoses in the fatty tissue surrounding the kidney.

The spleen is usually considerably swollen, dark, gorged with blood, and very friable. On its surface and borders in acute cases raised, blood-red points are frequently encountered.

The liver is sometimes enlarged, sometimes highly congested, and is found quite pale at other times. Occasionally its surface is mottled with pale greenish patches.

The kidneys are more or less changed. In those animals inoculated hypodermically, as well as in a few others, they were very large. Frequently the surface is dotted with a variable number of dark red points, or extravasations beneath the capsule. The medullary portion is commonly much congested; even the tips of the papillæ may assume a dusky hue. The cortical portion in some cases is the seat of a hemorrhagic inflammation. On section it is dotted with closely set, dark red points, probably the glomeruli in a state of extreme engorgement.

The heart is but slightly affected The pericardium is always more or less distended with fluid. In acute cases a variable number of punctiform and larger extravasations are present beneath the epicardium of the auricular appendages. More rarely a few are found beneath the endocardium of the ventricles. The right side is, as a rule, distended with a dark coagulum, and left nearly empty.

The lungs are in many cases normal, both in cases of rapid death and protracted disease. We have seen many cases in which perfectly sound lungs accompanied extensively ulcerated intestines. In a moderate number of acute, virulent cases, the lungs are, in general, collapsed and pale. Under the pleura, however, there are seen small patches of a dark red color, which correspond to limited regions of dark hepatized tissue, not much more than one-fourth of an inch in diameter. These foci are also found throughout the lung tissue in greater or less abundance. In the advanced stages of chronic swine-plague the major part of the lungs may be completely hepatized. This condition we have found but rarely, and it may depend on circumstances not yet clearly understood.

The lymphatic glands are always more or less affected, those of the thorax as well as those of the abdomen. The glands at the root of the mesentery are very much thickened and confluent, mottled red and

whitish. The medullary portion is commonly reddened, the cortex more frequently gorged with blood. The glands imbedded between the coils of the large intestine are usually of a very dark red. When these coils are torn apart the glands are brought to view as isolated bean-shaped bodies, their dark blood-red color contrasting markedly with the adjacent paler, flesh-colored serosa. This congestion prevails throughout the gland-tissue. On section the knife becomes covered with blood. This description applies equally well to the glands in the region of the stomach, the deeper inguinals, the bronchial and mediastinal glands. In chronic cases which have lasted from three to four weeks the lymphatics are usually large, but very pale and tough on section.

The intestinal tract is ordinarily the seat of the most severe lesions. In the stomach the fundus or most dependent portion is deeply reddened, often blackish in color, depending on the amount of extravasated blood. Occasionally clots of blood are found forming a coating around the food. In older cases the inflammation may be absent or replaced by isolated ulcers. The duodenum is rarely affected. The jejunum seems to enjoy a still greater immunity. The ileum is less exempt from pathological changes, which seem to be proportional to the extent and severity of the lesions found in the adjoining large intestine, which will be first described.

In cases of sudden death the mucous membrane of the large intestine is deeply congested throughout. In a comparatively small number of cases this inflammation is limited to the mucous membrane on and around the ileo-cæcal valve. At the base of this valve there is a patch in which are imbedded the flask-shaped glands described by Klein. The mouths of these may be plugged with mucus, and there may be, in addition, yellowish points and patches on the valve (the beginnings of ulceration) imbedded in a livid membrane. When the large intestine is deeply congested points of blood extravasation are usually present, and the redness itself may be made up of aggregations of dark points. Clots of blood are occasionally found among the feces, which may themselves consist of altered blood. In more advanced cases, pigment spots are occasionally found in lines and groups. These spots may be surrounded by a yellowish necrosed border. Such beginning ulcerations are not frequent. The black blood clot, surrounded by a zone of yellow, necrosed tissue, suggests the genesis of ulcers from hemorrhagic foci. In still older cases the dark-red membrane is studded with dirty, yellowish excrescences, or ulcers varying from one-eighth to 1 inch in diameter. In cases of very protracted disease, the inflammatory redness of the membrane has subsided, leaving the roundish button-like ulcers upon a pale background (Plate I). Or large areas may be covered with a continuous ragged mass of dead tissue.

Lesions of the ileum are either entirely absent or limited to areas of punctiform reddening, with occasional extravasations. In the average case of swine-plague there is an abrupt change observable when the valve is slit open, the dark, injected, brownish ulcerated membrane of the cæcum on the one side, the pale mucosa of the ileum on the other, separated by the free border of the valve. In but three of about fifty cases did we find ulceration. These are fully described in the preceding pages (pigs 105, 140, and 145). In two of these (140 and 145) the disease was produced by inoculating and feeding pure cultures of the bacterium of swine-plague. We lay some stress upon this fact, as it may eventually prove the means of distinguishing this disease from *rouget*, which prevails abroad, but most probably does not exist in this country.

SWINE-PLAGUE AND TYPHOID FEVER.

Recent investigations* have shown quite conclusively that there is constantly present in the internal organs of persons who have died of typhoid fever a short bacillus, about three times as long as thick, equivalent in length to one-third the diameter of a red blood corpuscle (about 2.3μ). This bacillus is spore-bearing, and does not stain so readily as most bacteria. It is motile, but does not liquefy gelatine. It grows on potato and in blood serum. Injected into rabbits, mice, guinea-pigs, and pigeons, it produces no effect whatever. In comparing with this organism the bacterium of swine-plague, we are at once set at rest as to the non-identity of the two diseases. These organisms resemble each other in that both are motile and fail to liquefy gelatine. They differ in size, in the habit of forming spores, and in the manner of growing on potato. More important than this, however, is the difference in the effect on the lower animals. The bacterium of swine-plague is fatal to guinea-pigs, rabbits, mice, and pigeons in the order named. The bacillus of typhoid fever has no effect on these animals. What the effect of bacterium of swine-plague would be in the alimentary canal of man is a matter of extreme importance to the public health, but cannot be determined experimentally, from the nature of the case. That it would have some disturbing effect is highly probable.

OTHER INVESTIGATIONS OF ROUGET AND SWINE-PLAGUE.

In Pasteur's first communication on *rouget* (*Comptes Rendus*, 1882, xcv, pp. 1120–1121) he describes, as the cause of the disease, a microbe having the form of a figure-of-eight and resembling the microbe of fowl cholera, but smaller and less easily seen. He speaks of it as being easily cultivated. It kills rabbits and sheep, but has no effect on fowls. In a second communication, made about a year later (*loc. cit.*, 1883, xcvii, pp. 1163–1169), he confirms the statements made in the preceding communication and describes the methods which he adopted to obtain an attenuated virus or vaccine. If a series of pigeons, which are susceptible to the virus, be inoculated, one from the other, the virus obtained from the last pigeon is more potent than that derived from swine. If, in the same way, a series of rabbits be inoculated, the virus from the last animal of the series is much weaker than the original virus from swine, and when the latter are inoculated with it they do not die but are made sick, and henceforth are protected from the disease, or, in other words, vaccinated. It is established beyond a doubt by our own investigations and those of others during the past year that the microbe looked upon by Pasteur as the cause of the disease and cultivated for purposes of vaccination, is a bacillus which cannot be described as a figure-of-eight form by any means. It would be interesting to know whether the original microbe discovered by Thuillier is not really identical with the form which we have described as being the cause of swine-plague, and which, in general, appears under the form of a figure-of-eight when obtained from the spleen and properly stained. It remains still to be determined whether the disease known as *rouget* and swine-plague exist together on the continent. If they do, it is highly probable that Pasteur has studied two microbes, the bacterium of swine-plague corresponding to the form which he first described.†

* *Gaffky, Zur Aetiologie des Abdominal typhus. Mittheilungen a. d. kaiserlichen Gesundheitsamte. Bd. II S.372.*

† From our own experiments but a small portion of pigeons seem susceptible to the virus of swine-plague when injected in small doses, while they invariably succumb to the bacillus of *rouget*.

It is idle, however, to speculate whether Pasteur actually studied two kinds of microbes until we know whether the form of swine-plague prevailing in this country exists in France also.

Klein's exhaustive report on swine-plague (Seventh Annual Report of the Local Government Board, 1877–'78, supplement, pp. 168–281), though excellent as regards histological and pathological details, need not be considered here, as the methods adopted in the bacteriological investigations were such as cannot command our confidence to-day. We have already pointed out the fact that, in advanced cases of swine-plague, the peritoneal cavity, thoracic cavity, and even blood taken from the heart, contain various kinds of bacteria. This fact Klein did not perceive, nor does he mention it in a more recent publication. Suffice it to state that he failed to cultivate or detect any bacilli in the spleen of animals suffering from swine-plague (*op. cit.*, p. 219). Our own investigations show that the spleen contains the bacterium of swine-plague, excepting in cases of long standing disease.

In the more recent article mentioned above (*Arch. f. path. Anat.*, xcv, 1884, pp., 468–485) Klein describes a new series of experiments on swine-plague, in which he fails to produce the disease in pigeons, and regards Pasteur's cultures contaminated with the microbe of fowl cholera, because the latter considered pigeons susceptible. It is now evident that Pasteur at that time was cultivating the bacillus of *rouget*, which is fatal to pigeons. Klein describes in this article a new organism, differing from the spore-bearing leptothrix-like bacillus first described by him, which was, without doubt, some contaminating microbe, although he fails to perceive or acknowledge the difference. The new organism, as far as we can gather from the text, resembles somewhat the one described in the preceding pages. It is motile, from 1 to 5 micromillimeters long, but is spore-bearing, a characteristic which the bacterium of swine-plague seems to lack. In cultures it is commonly 2 to 3 micromillimeters long, and appears either isolated, in pairs, or in chains of three. According to his statement, pigeons are wholly insusceptible to it. He, however, failed to define the characters more minutely by cultivation on different substrata, so that we are left in doubt whether the microbe liquefies gelatine or not, whether it multiplies on potato or in milk, and whether the liquid cultures made did actually contain but one kind of microbe.

The most recent investigations in Germany* concern themselves chiefly with the disease termed *rothlauf* and identical with *rouget* in France. There is a tacit assumption that this disease and the one described by Klein as pneumo-enteritis (which is the disease prevailing in this country) are identical. It is hoped that in the preceding pages the radical difference between these diseases has been permanently established. There seems at present no reason for doubting the results of the foreign investigations which regard the delicate bacillus cultivated as a vaccine by Pasteur as the cause of *rouget* or *rothlauf*. In endeavoring to obtain from descriptions a clear idea of this disease as it exists on the continent, we have found many lesions common to the two diseases, but the characteristic changes almost invariably found in the large intestine are not mentioned at all by Löffler. The descriptions given by Lydtin and Schottelius leave us in doubt whether they did not actually study the two diseases at the same time. The presence

*Löffler: *Experimentelle Untersuchungen über Schweine-Rothlauf. Arbeiten a. d. Kaiserlichen Gesundheitsamte, Erster Band. S.* 46. *Schütz: Ueber den Rothlauf der Schweine und die Impfung desselben, op. cit. S.* 56. Lydtin *u.* Schottelius: *Der Rothlauf der Schweine seine Entstehung und Verhütung,* 1885.

of swine-plague in England would naturally lead us to infer its existence on the continent.

In the animals examined by Löffler in the years 1882 and 1883, the fine bacilli were found constantly present in the skin and internal organs. Mice and rabbits usually succumbed to the inoculations, but pigs themselves failed to contract the disease when inoculated. The *post mortem* of a pig, which was affected with the disease and killed by bleeding, is given by him as follows:

The skin of the entire abdomen, more especially in the axilla and inguinal regions, intensely reddened. Lungs of a rosy hue. Pharynx bluish red; awns in the tonsils. Spleen enlarged, dark brownish red, tough. Mucous membrane of the stomach and small intestine reddened, with numerous ecchymoses. Follicles enlarged. Mesenteric glands brownish red, considerably tumefied, and studded with hemorrhagic spots. Parenchyma of kidney changed. Beneath capsule as well as in the interior, numerous hemorrhages. Parenchyma of liver slightly clouded.

We miss here any lesions of the large intestine almost invariably found by us and carefully described by Klein.

In another pig Löffler (*loc. cit.*, p. 52) found extremely small, ovoid bacteria, recalling the organisms causing septicæmia in rabbits, especially when in process of division, although they were but half as large. These bacteria were obtained in a pure state from the skin, liver, and kidneys. The *post mortem* appearances were as follows: Skin of the abdomen, of the genital organs, and neck livid red. Enormous œdema of the skin of the neck. Pharynx reddened and swollen. Mucous membrane of larynx and trachea intensely dark red. Lungs and heart but slightly affected. Parenchyma of liver and kidney clouded. Mucous membrane of stomach and beginning of duodenum intensely reddened. Intestine elsewhere normal. Mesenteric glands not enlarged. Inoculations with portions of the œdematous skin, liver, and kidney produced speedy death in rabbits, mice, and guinea-pigs. The virus differed in this respect from that of *rouget*, which does not affect the latter. The most prominent lesion in all cases was an extensive œdema of the subcutaneous connective tissue. This organism, cultivated through many generations on gelatine, was found fatal to these same animals six months later Of 2 pigs inoculated on abdomen and thigh at the same time, one died within forty-eight hours with enormous œdema of the subcutaneous tissue. The other pig remained healthy.

The experiments of Schütz confirm those of Löffler as to the relation of the fine bacillus to *rouget*. He produced the disease in two pigs by inoculation. One of them (female) received the entire contents of a Pravaz syringe subcutaneously on the inner aspect of the thigh. The other (castrated male) was inoculated by simply pricking the skin down to the subcutis five times with a needle of the syringe used in the previous injection.

At the end of the second day the temperature of both slightly elevated. On the morning of the third day they refused their food and were very weak. The skin of the pig inoculated with the pricks of the needle was faintly reddened everywhere; in some places quite markedly so. Pressure effaced the color for a moment. The animal receiving the larger dose had no marked discoloration of the skin. This animal died at the end of the third day. The *post mortem*, made on the following day, gave, in brief, the following: Bluish discoloration of the skin; serous effusions into the peritoneal and pleural cavities. More or less reddening of the mucous membrane of stomach and intestine, large and small, with occasional hemorrhagic spots. Bacilli present in the serous exudates, in the blood, liver, kidneys, and lymphatic glands in

moderate number; very abundant in lungs and spleen. The other animal died a day later. The lesions were very much the same, excepting that there were hemorrhagic spots and patches beneath the endocardium of the left heart.

The same investigator also produced the disease in mice, pigeons, and a rabbit. In the latter animal it assumed the form of a local erysipelas at first, leading finally to death.

In a more recent article (*Arch. f. wiss. u. prakt. Thierheilkunde*, 1886, xii, 30–52) he gives the autopsy notes of 7 pigs which died of *rouget*. In summing up these cases he says (page 44):

> In all animals there were diseased the stomach, the intestinal canal (the solitary follicles and Peyer's patches), the mesenteric glands, the spleen, liver, kidneys, the heart, and the skin.

In the notes of individual cases we observe that the skin was invariably bluish red. In the intestine, ulcerations were absent, the large intestine being nearly normal in every case. In the blood and spleen the fine *rouget* bacilli were found in all cases on cover-class preparations.

The latest and most exhaustive work on *rouget*, in connection with extensive experiments with Pasteur's vaccine, is that of Lydtin and Schottelius. (*Op. cit.*) They find that animals which succumb to vaccination present lesions markedly different from those which die of spontaneous infection. We quote from page 21 concerning the intestinal lesions in spontaneous cases (Lydtin):

> The solitary follicles, as well as Peyer's patches, appear quite distinct, especially near the posterior extremity of the small intestine. Sometimes they have dropped out so that real intestinal ulcers, especially in the region of the ileo-cæcal valve, are present, but only in small number. The contents of the large intestine are either solid, or, if this be not the case, blackish, fluid, resembling wagon-grease. The mucous membrane is also swollen diffusely, reddened in spots or patches. In many places it seems corroded, brownish, and deprived of its epithelium.

There is no mention of ulceration in the large intestine. In animals which died from the effects of inoculation with Pasteur's vaccine (6 out of 119) Dr. Schottelius determines (p. 206) that "the mucosa of the intestinal canal is not altered. It is covered with intestinal mucus and normal feces, and is pale, with the exception of a faint reddening near the ileo-cæcal valve."

In the autopsy notes of a pig infected in the natural way, the same author (p. 209) describes an extensive swelling and ulceration of Peyer's patches, and the solitary follicles of the lower portion of the ileum. "Such ulcers are also found in the upper portion of the large intestine, proceeding from solitary follicles, hence correspondingly smaller and circular." We have already called attention to the fact that in swine-plague the ileum is rarely implicated, and only in the severest cases, and that the ulcerations in the large intestine are not confined to lymphatic follicles, but may involve the entire surface. This latter fact was pointed out by Klein. He also states that he saw, in but one case out of fifty, two deep ulcers in the ileum.

Whether the ulceration of the lymphatic structures in the ileum, on the one hand, and the necrosis of the mucous membrane of the large intestine on the other, are differential characters in the two diseases, still remains to be determined. In connection with the bacteriological investigations, Schottelius finds in cases of swine-plague, besides the fine bacillus, a larger one always present, resembling *bacillus subtilis* and without the power of movement. This microbe grew quite well on gelatine, and had no effect on mice, rabbits, or pigs. Its presence is explained by the author as being due to the ulcerations in the intestine,

through which it enters the system during life. Our own experience in dealing with swine-plague is thus strikingly confirmed. We encountered not one and the same microbe, but many and different forms in the blood as well as in the serous exudates of chronic cases.

The investigations of Cornevin (*Première étude sur le rouget du porc*, 1885), are marred by a want of precision in describing the specific microbe. If Cornevin had applied the recent methods of culture by which bacteria may be well characterized, some light might have been shed on the the question, whether both *rouget* and swine-plague or *rouget* alone prevail in France. We limit ourselves to quoting all that is stated concerning the microbe of *rouget* in his monograph:

If a drop of culture liquid from an advanced generation (*generation élevée*) is examined microscopically, it is found to contain large numbers of fine granulations, punctiform, or in the form of a figure-of-eight, refrangent, slightly motile, chiefly isolated, some united in pairs, threes, or fours. These granulations or cocci, which we have already seen in the blood, are the agents of the virulence, the specific microbes of *rouget*.

* * * * * * *

In a series of generations *in vitro*, their form, originally varied, becomes regular and their dimensions uniform. In these conditions their multiplication seems to take place only by budding; on the side of the micrococcus there appears a bud, which grows and finally separates to undergo in turn the same process.

* * * * * * *

But if the examination is made on recent cultures, particularly those inoculated with products from rabbit or rat, or with those from a pigeon affected with chronic *rouget* one preceives rods motile, short, with rounded extremities mingled with punctiform organisms.

From this description one might be induced to infer that Cornevin had under observation the bacterium of swine-plague, rather than the bacillus of *rouget*. The absence of any other biological facts, however, makes any conclusion hazardous. Moreover, the budding of micrococci must be looked upon with suspicion.

M. Baillet (*Recherches sur le rouget ou mal rouge du porc. Recueil de Médecine Vétérinaire*, 1884, p. 369), who also studied *rouget* in France, describes the microbe as being "in two oval sections, united in such a manner as to give the whole the form of a figure 8." He speaks of it as being "endowed with great mobility." Here, again, we are reminded of the bacterium of swine-plague, but this meager statement might describe a number of forms including *bacterium termo* Baillet succeeded in producing some disease in two guinea-pigs by inoculating cultures of this microbe. Death took place in ten days. The autopsy showed "congestion of liver and lungs, reddening of the intestinal mucosa; a congested state of the ganglia and an injection of the peritoneum and the pleura, characteristic of *mal rouge*." Three rabbits, 1 dog, and 2 pigs failed to take the disease after inoculation.

Very recently an assistant of Pasteur's, Dr. Roux (*Comptes Rendus, Soc. de Biologie*, 1885, p. 684), in exhibiting photographs of the microbe of *rouget*, speaks of it as one of the smallest that have been studied, since its dimensions in the tissues do not exceed 1 to 2 micromillimeters.

In the blood, under an amplification not greater than 450, the organism appears in the form of a very elongated 8 (*huit très allongé*). It is in this form that it appeared the first time to MM. Pasteur and Thuillier

How the writer could have spoken of it in this way while acknowledging at the same time the work of Lydtin and Schottelius, who describe it as an undoubted bacillus, seems incomprehensible to us. It appears impossible that any one acquainted with the appearance of the bacillus of *rouget* in the tissues and cells of an affected animal, or in

liquid media, could describe it under the form of an elongated figure of-eight. Both Roux and Schütz (*loc. cit.*, p. 75) describe the microbe of *rouget* as non-motile. Schottelius, who agrees with Schütz in almost every particular concerning the characters of the bacillus of *rouget* and those of Pasteur's vaccine, describes the bacillus as motile. We have not seen any spontaneous movement in the cultures obtained from the vaccine, so that we feel inclined to believe that the cultures examined by Schottelius were impure.

The perplexing and conflicting descriptions given by the French observers are most charitably explained by assuming the existence of two hitherto undifferentiated diseases, that of *rouget* and swine-plague proper. It may be that the foreign bacteria frequently found in the internal organs in swine-plague have contributed to the general confusion. It may be that animals suffering from swine-plague have been invaded by the bacillus of *rouget*, which is more abundant in the various organs than the organism producing swine-plague.

CONCLUSIONS.

The preceding investigations definitely settle certain controverted points concerning the etiology of swine-plague which may be briefly summarized.

(1) Swine-plague is caused by a specific microbe multiplying in the body of the diseased animal. The microbe probably belongs to the genus bacterium, and has the power of spontaneous movement. It is easily cultivated in nutritive liquids, but grows less readily on gelatine which it does not liquefy.

(2) When introduced beneath the skin, this bacterium is fatal to pigs, rabbits, guinea-pigs, mice, and a certain percentage of pigeons. It is also fatal to pigs when introduced with the food or when they feed on the internal organs of swine which have died of the disease.

(3) The disease described in France as *rouget*, in Germany as *rothlauf* and for which Pasteur has prepared a vaccine, is caused by an entirely different microbe. The vaccine for this disease does not protect against swine-plague.

(4) The introduction of Pasteur's vaccine is not only useless but may contribute to the introduction and spread of a disease, the existence of which in this country has not yet been demonstrated.

OTHER MICROBES FOUND IN SWINE-PLAGUE.

Bacillus luteus (*suis*).—From the peritoneal effusion collected from a case of swine-plague April 10, 1884, plate cultures were made upon which the colonies indicated the presence of several kinds of microbes. The plates emitted a putrefactive odor, illustrating our former statement that the peritoneal effusion in advanced stages of the disease is very commonly inhabited by different kinds of microbes. From these plates a pure liquid culture of a bacillus was obtained which produced within a few days a distinct yellowish green coloration of the liquid medium. The animal had been placed with others sick with swine plague on March 11, and was plainly ill on March 26. When killed it was very low; and on *post mortem* examination, the mucous membrane throughout the entire length of the large intestine from the ileo-cæcal valve to the rectum, was studded with ulcers varying in diameter from one-sixteenth to one-fourth inch. The mucous glands were also swollen. They were elevated hemispherically with a depressed, dark central point, which was the

mouth of the gland. The lungs were quite pale and evidently normal with the exception of a few petechiæ. Other organs were not examined as it was a clearly marked case of swine-plague. At the *post mortem* minute portions from the superficial portions of the ulcer, as well as the liquid contents of the large intestine, were placed in sterilized broth for the purpose of attempting an isolation of the pathogenic microbe, which, it was supposed, would be present as the lesions seemed localized here. These tubes were set aside after plate cultures were made, and within a week were found to be colored yellowish green, though the sterilized broth was nearly colorless. This proved the presence of the same organism in the intestine and peritoneal cavity.

On May 12, a pig obtained from a neighboring farm in a very low condition, was killed at the experimental station and found affected with swine-plague. The peritoneal cavity contained a small quantity of coagulated lymph, a portion of which was collected in the manner described on page 240. The lungs were pale, a few lobules only congested. The pericardial cavity contained a considerable quantity of coagulated lymph. The large intestine was studded from cæcum to rectum with ulcers of various size, as in the preceding case. The smallest ones were uniformly yellow, the largest ones of a blackish color, and the intermediate ones with concentric rings of tints varying between the two. This is well shown on Plate I, which is a drawing of the cæcum and ileo-cæcal valve of this pig, made immediately after removal from the animal. The disposition and coloring of the ulcers are very well shown. Cultures from the contents of the intestine, from the superficial and deeper portions of the ulcers, were made as before, simply to observe whether they would become colored. The inference was that if present the chromogenous microbe would thus manifest its presence. These tubes, though kept for several weeks, did not become colored, and the belief had almost been given up that this microbe was present, when the appearance of the contents of the pipette in which the peritoneal fluid had been collected attracted our attention. A greenish-yellow coloring appeared at the surface, and slowly penetrated the depths of the coagulum. Plate cultures from this source proved the presence of the same microbe, and a small portion of the lymph introduced into sterile broth produced a yellow coloration in a few days.

From a case of swine-plague examined November 22, 1884, a liquid culture had been prepared from the effusion into the pericardial cavity, and found to contain several kinds of microbes. It was set aside, and after several weeks a faint greenish color was detected near the surface, and observed after a time to descend and tint uniformly the entire liquid. The culture was kept because it contained a chromogenous microbe, which forms always prove interesting for observation. When the chromogenous microbe had been isolated as described above, it was found that the color of last year's culture exactly resembled these prepared recently. Plate culture proved that the cause was the same microbe—a motile bacillus. This organism was thus isolated and cultivated in a pure state, twice from the peritoneal cavity, while liquid cultures demonstrated its presence in the intestine itself.*

Up to this time we had not obtained uniform results pointing definitely to any microbe as the cause of swine-plague. The appearance of this chromogenous bacillus in a number of cases of undoubted swine-plague induced us to make some inoculation and feeding experiments on swine, in order to test its pathogenic properties. These, though negative,

* Obtained also from the blood of a case of swine-plague November 5, 1885. (See pig No. 105.)

are given below. It is interesting to compare with them the positive results obtained with the bacterium of swine-plague.

On June 4, 2 pigs were inoculated by injecting hypodermically about 2^{cc} of a liquid culture of the bacillus on the inner aspect of the thigh. No symptoms were noticed at the time, and both remained well for several months after.

Beginning with June 4, 2 other pigs were fed with cultures in broth and on potato of the same bacillus each day for nine days in succession. The potato cultures were selected of various stages, some several weeks old, so that any spores that might form would be certainly introduced. The potato was carefully cut up and mixed with a small quantity of milk; the liquid cultures, from a few days to a week old, were also mixed with milk, as it was found impossible to feed them in any other way. The animals remained well for months after. A number of mice and a rabbit inoculated subcutaneously remained well, so that we were compelled to regard the microbe as non-pathogenic, at least with reference to these animals. In the course of the feeding experiments the growth of this microbe presented so many interesting features that it was thought best to describe it more minutely and reproduce illustrations of different cultures. Since then we have inoculated sterile tubes with small portions of the contents of the large intestines from several pigs without obtaining any coloration of the culture liquids that would lead us to infer the presence of the chromogenous bacillus. In endeavoring to determine its presence in healthy animals it would be necessary, however, to inoculate a series of tubes with portions of the intestinal contents taken at short intervals from the stomach to the rectum.

General characters.—The organism is rod-shaped, with ends slightly rounded, occurring isolated or in pairs, sometimes in chains of three or four segments. It varies in length from 1.2 to 1.8 micromillimeter. Many rods before division into two are from 3 to 4 micromillimeters long. Occasionally forms up to 10 micromillimeters and more in length are met with. Their thickness—something rather difficult to determine—seems to be about .3 to .4 micromillimeter. The shorter forms present the appearance of an elongated oval. Rods of all dimensions above given are obtainable from the delicate pellicle found on liquid cultures about twenty-four hours old. Obtained from potato cultures they are quite uniformly from 2 to 2.5 micromillimeters long.

When grown in a drop of nutritive liquid on cover glass as described on page 242, stained and examined with a homogeneous immersion $\frac{1}{18}$ objective, there will be found in twenty-four hours short oval forms, not much longer than 1 micromillimeter. In addition to these, long filaments are found scattered among the ovals, which have clear spaces resembling unstained spores. These spaces are as broad as the filament itself, giving it a jointed appearance, with square spaces between the separated segments. In fact, there remained much doubt whether to regard them as spores or as the spaces between the ends of contiguous elements. Cultures seventy-two hours old contained but few filaments, while many of the ovals seemed to contain very small unstained areas. The minuteness of the forms made a clear interpretation impossible. From a stained specimen obtained from a potato culture in an advanced stage, the rods, which were about 1.5 micromillimeter long, contained these clear spaces, each rod having one which was nearer one extremity. This fact argued in favor of the interpretation of these spaces as unstained spores, and they were thus interpreted before cell cultures were made.

The bacillus at a certain stage of its growth is *motile*. When a drop from a liquid culture, suspended on the under surface of a cover glass, is examined with high powers, the bacilli will be seen moving in straight or curved lines very rapidly across the field. The movement seems even more rapid than that of *bacterium termo*. Occasionally a bacillus may be seen with one extremity stationary and the entire rod revolving about it as a pivot. Sometimes a pair are observed moving across the field, at the same time revolving about the point of union, each describing the surface of a cone.

Growth on gelatine plates.—If one drop of a culture of this bacillus in some nutritive fluid like beef broth be transferred to 10^{cc} of sterilized broth or water and, after thorough shaking, a portion of this liquid be transferred with a platinum loop to about 10^{cc} of liquefied nutritive gelatine,* and the latter poured upon one or two plates, minute spherical masses or "colonies" will appear in twenty-four hours scattered through the gelatine. These colonies, magnified 50 to 100 times, have a pale, finely punctated or granular disk, a well defined boundary (Plate IV, Fig. 2), and vary from .025 to $.05^{mm}$ in diameter. Within forty-eight hours the diameter of the disk becomes from four to five times as large as in the preceding stage (Plate IV, Fig. 3). It begins to lose its uniformly granular appearance. Faint irregular lines running radially give it occasionally a mulberry aspect, and the entire disk when considerably magnified is covered with short, minute lines, also running radially. The margin is now quite irregular.

The colonies beneath the surface remain spherical until they touch the surface, then liquefaction rapidly progresses, and the colony assumes its most characteristic appearance. This occurs from two to four days after the preparation of the plate, the time depending on the temperature of the room and the thickness of the gelatine layer. The colony now appears to the naked eye as a concave depression from 2 to 3^{mm} in diameter, covered by irregular, yellowish masses (Plate IV, Fig. 4). Under a 1-inch objective and with transmitted light these masses or clumps are seen to condense towards the center into a kind of nucleus. Towards the periphery they grow smaller and more delicate until lost in finely granular patches. A dark border, due to refraction, bounds the colony. At this stage, the transparent gelatine around the colonies becomes stained with a greenish-yellow color which spreads *pari passu* with the growth of the colonies, until the entire gelatine layer is converted into a yellowish, opaque liquid, readily flowing from the plate when the latter is inclined. The appearance of such a plate is well shown on Plate IV, Fig. 1. Colonies of various stages are present, the difference in size depending no doubt on the relative depth of the colonies below the surface where the small amount of oxygen is soon exhausted. Colonies at or near the surface from the start spread very rapidly, and liquefaction equally so. The bacilli make use of their power of movement through the liquefied gelatine, and thus form the ring of opaque matter at the periphery of the depression. When transferred to a slide, their movement is easily demonstrated in the liquid gelatine. The appearance of colonies is not so uniform as one might suppose; the minor features during the early stages are very apt to puzzle the observer by their variability, which seems to depend on the density of the nutritive gelatine, the thickness of the layer, and the temperature. Taking all stages together, however, a diagnosis of this chromogenous bacillus is always

* Meat infusion containing 1 per cent. peptone, .5 per cent. sodium chloride, and 10 per cent. gelatine.

possible by means of plate cultures together with microscopic examination.

Growth in tubes of nutritive gelatine.—If one of the colonies of the plate culture be pricked with a needle, and the latter thrust to a depth of 3 to 4^{cm} into a culture tube containing about 10^{cc} of the well-known meat-infusion peptone gelatine and kept at 70° to 80° F., the presence of the bacilli will be manifested within twenty hours by an appearance of the gelatine such as is shown in Plate VI, Fig. 1. The track of the needle is indicated below by a number of minute roundish masses, the centers of growth of the individual germs, above by a slender inverted cone, its base coinciding with the surface of the gelatine. This cone is bounded by a delicate veil-like membrane, and contains liquefied gelatine. Plate VI, Fig. 2, represents the culture at the end of forty-four hours. The mass of liquefied gelatine has increased rapidly, so that the base of the cone now embraces the entire surface of the culture medium. The cone itself has extended downwards, involving all but two centers of growth at the lowest point of the needle track. It is still enveloped in a delicate, opaque membrane, but contains irregular masses of whitish, flocculent material. The liquefied gelatine at the surface is likewise mingled with flocculent masses.

At the end of the third day (Plate VI, Fig. 3) the liquefied layer at the surface, about 1^{cm} thick, consists of two portions, an upper, opaque, yellowish one, covered by a thin, whitish mycoderma; and a lower, translucent layer. The cone has become truncated and broader, consisting of translucent, liquid gelatine, with an opaque mass in the bottom. Wrapped about this cone may be seen on careful inspection, a very delicate outer funnel, barely separated fromt he inner, coarser one, and continuos below with the two still intact colonies.

The later stages are quite similar to the one just described. The layer of liquid and turbid gelatine grows in depth (Plate VI, Fig. 4), while the cone broadens into a hemisphere until finally the gelatine is uniformly involved to a certain depth (Plate VI, Fig. 5). A comparison of the figures shows that liquefaction does not proceed laterally from the colonies in the track of the needle, but downwards. The lowest colonies remain distinct to the last. This may be due to an insufficient supply of oxygen below, which prevents the colonies there from enlarging after they have reached a certain size. When the gelatine becomes liquid above, it permits the bacilli to make use of their power of movement, and a distinct bacillar membrane is formed where oxygen may be obtained. The liquefied gelatine gradually assumes an orange-yellow tint as the pigment becomes diffused through it. The peculiarities of the growth in gelatine may be summed up in brief, as follows: Rapid liquefaction of the gelatine, with the subsequent formation of a membrane on the surface of the liquid portion; veil-like envelope of the funnel with opaque masses near its apex; inability of the colonies buried in the gelatine to grow beyond a certain size; and, lastly, the gradual tinting of the gelatine in advanced cultures.

Culture in coagulated blood serum.—The growth of the bacillus on coagulated blood serum in tubes takes a course very much like that in gelatine (Plate VI, Figs. 6 and 7). The needle track along which the bacteria are deposited enlarges but little, whereas, the serum becomes liquefied from above downwards, causing a concave depression on the surface of the serum. In a side view, this depression appears as an air-bubble with a broad, dark border. As the liquefaction progresses downwards the liquid portion becomes dark green (Plate VI, Fig. 6). A brittle white membrane forms on the surface, and a gelatinous, curdy

deposit rests upon the still intact portion in the bottom of the tube. Finally, within a period of four to six weeks, the entire mass of serum has become liquid. It is evident that growth is very imperfect below the surface of solid culture media, owing to the limited supply of oxygen. Hence the changes, at first rapid, manifest themselves more slowly later on; the lowest portions of the culture medium are liquefied either very slowly or not at all in some tubes.

Growth on agar-agar (Plate V, Fig. 6).—When a needle with adherent bacilli is made to penetrate the surface of an agar-agar culture, the following will be observed about twenty-four hours later: A smooth, thin, whitish layer has extended on the surface of the agar-agar from the inoculated point in all directions, forming a patch about 1^{cm} in diameter. The margin of this patch is quite transparent. The track of the needle is marked by an extremely delicate, veil-like appearance. At the same time the agar-agar has assumed a reddish color around the growth. The later history of the culture is characterized by the very gradual surface extension of the patch, while the growth in the track of the needle remains quite stationary. This bacillus is likewise unable to liquefy the medium. The coloration of the agar-agar continues until the entire mass becomes tinted, as indicated in the figure. If the agar-agar has been hardened so as to form an oblique surface in the tube, as shown in Fig. 6, the water of condensation collecting below becomes amber colored.

Potato cultures (Plate VII).—The boiled potato presents a very good soil for the multiplication of the bacillus. If a needle dipped in some pure culture be drawn over the surface of a freshly boiled potato, a rosy patch is visible twenty-four hours later, containing a lighter streak (Plate VII, Fig. 1). This line is soon observed to be a slight, pale, reddish elevation, which gradually grows broader and thicker until it presents the appearance reproduced in Fig. 2. A broad brick-red band with wavy margin and 1^{mm} to 2^{mm} thick now represents the original needle track. When about a week old, the red color of the colony (Fig. 3) is converted into a greenish tint which becomes gradually deeper until the growth comes to a standstill; Fig. 4 shows this color over the entire potato. Before inoculating, this potato received on its surface five or six drops of a sterile meat infusion. The bacillus grew more actively, and the moist condition of the surface probably gave it an opportunity of employing its power of movement to invade the entire surface. We would suggest in this connection that if any microbe refuses to grow upon potato, the latter be saturated with a nutritive fluid in which the bacillus is known to multiply. We have been enabled to force the growth of micrococci in this way when it failed on the bare potato surface. In this way microbes that liquefy gelatine and blood serum may be studied on a solid substratum without difficulty. In from two to four weeks the growth ceases. It has then a viscid, pasty consistency, and when scraped off and dried on glass slides forms a dirty, dark green crust.

Cultivation in fluid media.—If a portion of a colony be transferred with a flamed platinum loop from the gelatine plate into a culture tube containing about 10^{cc} of a perfectly limpid sterile meat broth and the tube kept at about 37° C., the liquid will become uniformly clouded and of a pale yellowish green color within twenty-four hours. The surface is covered with a delicate whitish, wrinkled membrane, which pushes its border for a short distance up the sides of the tube. Violent shaking causes the membrane to mass together and subside; it is, however, replaced by another within twenty-four hours. The color of the turbid

liquid becomes orange, with a greenish tint in several days. After one or two weeks the suspended matters slowly subside, and the termination of growth is indicated by the limpid condition of the liquid which has meanwhile deepened in color. In a month or six weeks it becomes amber colored.* Figs. 1, 2, and 3 on Plate V indicate this gradual color change. The deposit in the bottom of the tube, observable after the first day, increases to the end of growth and remains as a viscid mass, not readily dissociated by shaking.

These liquid cultures afford the best means for the more detailed examination of the pigment. They show that the bacillus is chromogenous, and that the pigment produced is soluble in the culture liquid. They point out that it is aerobic, since it grows during a portion of its vegetative state on the surface of the liquid. The liquid media employed were slightly alkaline infusions of meat. The reaction at the end of several weeks was strongly alkaline. Several cultures made in a 3 per cent. solution of Liebig's meat extract (sp. gr. 1.0116), not neutralized, and therefore markedly acid, were found strongly alkaline after a month. This would indicate that the bacillus is capable of flourishing in moderately acid media and produces an alkaline condition of those media. In connection with these facts it was also noticed that the solution of meat extract was quite viscid throughout, and that the deposit in the bottom had the ropiness of white of egg. Whether this condition, which is merely an exaggeration of the deposit in meat broth and of the advanced stages of the growth on potato, was due to the enormous multiplication of the bacilli, to the degeneration of their substance around spores or to the formation of gelatinous envelopes cannot be said. The third supposition seems the most plausible, since an envelope can be detected in stained specimens examined in water, contrasting with the surrounding field by the absence of color or opacity.

Cultivation in milk.—The multiplication of this bacillus in milk presents many peculiar phenomena. The milk, sterilized by discontinuous boiling and inoculated from a pure culture, shows, after thirty-six to forty-eight hours, a narrow zone of clear liquid, gradually growing deeper, beneath the surface layer of cream. The casein is evidently precipitated and subsiding. Within four or five days a quantity of milk about 5^{cm} deep will present the following layers (Plate V, Fig. 4): On the surface a whitish, flaky layer intermixed with small yellow masses, which consist chiefly of fat, about $.5^{cm}$ deep; beneath this a clear watery liquid, tinged yellow, about 2.5^{cm} deep; below this, a semi-translucent, gelatinous material, about $.5^{cm}$ thick, and finally in the bottom of the tube a white, flaky deposit 1.5^{cm} thick, consisting of the remaining casein. The later changes consist chiefly in an increase of the liquid at the expense of the solid matter. The liquid, at first colorless, becomes light yellow and finally yellowish-red. The reaction becomes markedly alkaline in a few days. It seems probable that the changes above described may be interpreted by assuming that the casein is at first precipitated, then slowly transformed and dissolved, the gelatinous layer being an intermediate stage of the transformation before final solution.

It was in connection with the peculiarities of the milk culture that our attention was called to Schröter's investigations of pigments formed by bacteria.† He found milk turning yellow spontaneously, and undergoing changes very similar to those just described. The behavior of

*When grown in liquid media containing peptone an emerald green was produced before the final amber color appeared.

† *Beiträge zur Biologie der Pflanzen*, 1, 2, p. 120.

the pigments studied by him towards chemical reagents differs very little from the bacillus under consideration. Yet the description of the bacillus is so meager, and pure cultures were not obtained, that we prefer to keep the two species apart until the bacterium of yellow milk, *bacterium synxanthum*, shall be studied and described according to present accepted methods from cases of yellow milk arising spontaneously.* Since the bacteria producing changes in milk are of some economic importance, the relationship between the bacterium of yellow milk and the bacillus under consideration will be traced somewhat more in detail by a comparison of the pigments produced.

The pigment is most readily obtained from cultures in milk or meat infusion by evaporating to dryness over a water-bath, removing the fat of the milk with ether, redissolving in distilled water, and filtering. A perfectly clear filtrate is thus obtained, containing the pigment in solution, which may then be examined chemically and spectroscopically. The color of the solution varies, according to the concentration and age of the culture, from an orange or yellow to a deep amber. The greenish tint in recent cultures is probably due to the suspension of the bacteria through the liquid. In cultures containing other bacteria the green is most pronounced; probably the bacteria are more numerous. In meat infusion with peptone a deep emerald green is produced before the final amber tint appears.

The pigment is insoluble in absolute alcohol and ether, neither of which takes up any from the dried residue of the culture liquid, while water becomes colored immediately. The aqueous solution is nearly, but not entirely decolorized by the addition of a large quantity of concentrated nitric or hydrochloric acid. The original strength of color returns, however, if the acid be neutralized with an alkali such as potassium hydrate or ammonia. Schröter's results (*loc. cit.*) thus far coincide very closely with our own; but he states that the color produced by the bacterium of yellow milk disappears when a very small quantity of mineral acid is added. In the above experiments a large quantity of acid was necessary. In later experiments made to confirm these statements it was found that in recent cultures the color was easily removed by adding directly to the culture a small quantity of acids, even of acetic acid, and restored on neutralization with alkalies. The older the pigment the more reagent is required to affect it. When the culture liquid has been left clear by the complete subsidence of the bacillar growth, which is usually accomplished in three or four weeks, it is nearly impossible to totally destroy the color. The color of the culture liquid itself was not affected by acids or ammonia. We must, therefore, assume some change in the constitution of the pigment after its formation by the bacilli.

Schröter (*loc. cit.*) also speaks of its resemblance to an aniline yellow. Of several aniline colors at hand, we found that naphthol yellow was soluble in water but insoluble in absolute alcohol. Its depth of color was slightly reduced by acids and restored by alkalies, resembling in this respect the coloring matter of old cultures. It cuts off the blue end

* Schröter fails to give the dimensions of this bacterium, but Flügge (*Fermente und Mikroparasiten*, p. 113) describes it as .7 to 1 micromillimeter long, and differing but slightly from *bacterium termo*. This length is hardly equal to the shortest forms of *bacillus luteus suis*. The *bacillus ruber* of Frank should also be taken into consideration in endeavoring to trace the identity of the bacillus under consideration; but the inefficiency of dimensions merely, or of a single, isolated fact concerning pigment in determining species, is too apparent to need illustration. Variations in size, according as solid or liquid culture media are employed, are thrust upon our observation at every step.

of the spectrum very sharply as far as 51 of the scale, but has no absorption bands. The spectrum of the bacillar pigment likewise presents no absorption bands. In layers 1.5^{cm} to 2^{cm} deep, all the blue end of the spectrum as far as 51 of the scale (including a portion of the green) is intercepted, but there is no sharp demarkation as in the spectrum of naphthol yellow. These resemblances, though suggestive, are far from conclusive.

The same color phenomena and disposition of liquids and solids in milk cultures were observed whether the milk was sterilized by discontinuous boiling or by heating to about 65° C. As Schröter (*loc. cit.*) had invariably failed to produce the color on unboiled milk, it was determined to test this statement. Two sterilized culture tubes were filled directly from the udder of a cow after the milk had been discharged for a short time. One was inoculated with the bacillus, the other not. After remaining in the incubator at 37° C. for two days, nearly all the casein was found replaced by a turbid liquid in both tubes; no color perceptible. After six days a coloration of the surface layer was noted in the inoculated tube, so faint that serious doubts arose whether the bacillus had multiplied in the presence of other microbes. Both cultures were slightly acid. On the addition of a few drops of ammonia a marked coloration of the entire liquid in the inoculated tube appeared, which disappeared as rapidly on the addition of some acetic acid. The other tube remained unchanged under like treatment. This phenomenon was confirmed by later trials, and would, no doubt, explain Schröter's failure with unboiled milk, if the two forms of microbes could be proved identical. The probable presence of the lactic acid bacillus and its product, lactic acid, masked the presence of the pigment for the time. When such cultures in unboiled milk are kept for a month or longer, transparent, lemon-yellow masses appear within and on top of the surface layer of cream, the liquid beneath gradually assuming a pale yellow color. The acid very likely has been neutralized and the culture is becoming alkaline. It now resembles sterile cultures in milk, as above described, very closely. The dense surface layer when tilted flows like honey; in fact, the tube may be inverted and held thus for a short time. The surface layer, nearly an inch deep, forms an effectual plug in preventing the escape of the watery liquid. This gelatinous mass is, no doubt, identical with the deposit found in old broth cultures, the exuviæ of the bacillar growth. The reaction of all colored cultures examined was found alkaline. In some recent cultures the reaction seemed neutral. Schröter found an acid reaction first, which became alkaline later on. As he inoculated from sources not necessarily pure, and had no means of isolating the microbe in question, he may have transferred the lactic bacillus with it, especially as coagulation took place in his tubes in twenty-four hours. In ours, a change was frequently not perceptible within forty-eight hours, which then consisted in the gradual settling down of the finely flocculent mass, leaving at first only a narrow zone of clear liquid near the surface, which became slowly deeper until it made up the major part of the original volume.

Impure cultures.—The question naturally arose during the investigation whether the presence of the bacillus would always assert itself through its peculiar pigment in a liquid in which a number of bacteria, more particularly putrefactive forms, were present. In case the color was produced as in pure cultures, we might infer safely that the bacillus was present and had been actively multiplying.

In mentioning its habitat, it was stated that a drop each of the feces and peritoneal fluid placed in sterile liquid media became intensely col-

ored within a week, though both cultures contained also putrefactive bacteria, as shown by plate cultures, which emitted a very offensive odor. In this case the activity of the bacillus was not much impaired by the presence of other forms. To obtain more evidence upon this point several culture experiments were made:

(1) On June 26 a tube of meat infusion was inoculated with a drop each from pure cultures of a bacillus, a micrococcus, and the bacillus in question. On June 29 a distinct yellowish-green coloration was perceptible. On July 6 the color was so clearly defined that the culture was set aside.

(2) July 8, to test the chromogenous power of the bacillus in presence of various putrefactive bacteria a piece of meat was allowed to remain in water at summer temperature for two days. At the end of this time the infusion emitted a very disagreeable odor. Into a tube of sterile meat infusion a drop each of the bacillus and of the putrid liquid was introduced. Into a second tube a drop of the bacillar culture was introduced, and after sixteen hours, when the liquid was turbid, a drop of the putrid liquid was added. Into a third tube a drop of the putrid liquid was introduced, and after sixteen hours a drop of the bacillar culture was added. On July 10 a greenish-yellow layer was seen on the surface of every culture, and on the following day this color had deepened and spread some distance into the liquid.

The coloring matter will, therefore, manifest itself when a variety of bacteria are introduced, either some time before or after the introduction of the chromogenous bacillus.

Considering these several facts, we do not hesitate to foretell the coloration of a limpid culture-liquid within a week, if the bacillus be present, even in minute quantity compared with other forms of bacteria. To this general principle we must make an important exception. It is very probable, according to our experiments with milk cultures, that any acid-producing bacillus, such as the bacillus of lactic fermentation, will mask the pigment until an alkaline reaction has been produced. It would be interesting to observe from the color of the culture liquids, the struggle of these two bacilli introduced together in a state of purity. It would, however, be sufficient, in order to determine the presence of this bacillus, to add a few drops of an alkali to any culture having an acid reaction.

Some additional biological observations.—In some tubes the bacillus retains its vitality for a considerable length of time. One culture retained its vitality from November, 1884, until May, 1885, when fresh tubes were inoculated from plate cultures with success. Another tube, inoculated September 14, failed to inoculate a fresh tube October 23, although at least twenty drops, including all the sediment, were introduced. When dried the bacillus retains its vitality but a limited time. A culture on potato about thirty-five days old was dried on slides at 100° F°. for twenty-four hours, and then kept at 70° to 80° F. Tubes of broth inoculated four weeks later with the dried scales became greenish-yellow in a week. Another potato culture of about the same age and dried in the same way failed when introduced into culture liquids six weeks later. The same culture liquids became promptly colored when inoculated later from living cultures. A period of five to six weeks seems sufficient to destroy its vitality.

To determine something as to its effect on egg albumen, some of the dried preparation of the latter was dissolved in water, coagulated by boiling, and a small piece added to some distilled water, to some meat broth, and to a 5-per-cent. solution of grape sugar; a 5-per-cent. solu-

tion was not provided with the albumen. The tubes were sterilized by discontinuous boiling and then a drop from a pure culture of the bacillus added to each. Of all the tubes only the one containing the egg albumen with meat broth was colored on the second day; the rest remained perfectly colorless. In three weeks this tube was opened and the albumen found converted entirely into a yellowish, viscid mass, similar to the deposit in other cultures of this bacillus. The albumen had been entirely transformed into the bacilli and their peculiar gelatinous product. Placed in distilled water, this mass yielded a considerable amount of yellow coloring matter so as to deeply tinge the water. The albumen itself was not sufficient to favor the growth of the bacilli in the other tubes. They needed in addition the salts present in the broth.

In all pure cultures on whatever media a characteristic odor was constantly present, which was intensified when cultures were heated and which was instantly recognized after being once perceived. In broth cultures it most resembled the odor of bees-wax. In no instance was any objectionable, putrefactive odor encountered, excepting in the mixed cultures above described.

This bacillus is purely aerobic, as shown by the following experiment: A small bulb containing about 5^{cc} of meat infusion was inoculated with a drop from a pure culture, and placed in a water bath which was kept at a temperature of 38° to 40° C. While in the bath, the bulb was connected with an air pump, and the air exhausted for about fifteen minutes. The bulb was then sealed and kept in the incubator for several days without revealing any signs of growth, the culture liquid remaining clear. After several days the sealed end was broken, when a copious growth of the bacillus appeared within a day, and in a week the characteristic pigment of the bacillus made its appearance.

While the inoculations with the *bacillus luteus* were going on, a *bacillus* found in cultures from the blood of a pig, in the peritoneal exudate of which the former bacillus had been detected by its color, was also cultivated in a condition of purity, and inoculation practised on pigs. The bacillus was also recognized in cover-glass preparations made from liquid cultures of portions of the ulcer which had been prepared to demonstrate the presence or absence of *bacillus luteus*. In cultures from the blood of the heart it was found associated with a micrococcus.

When isolated on plates the broth inoculated therefrom becomes turbid in twenty-four hours. The bacilli, about .5 micromillimeter in diameter, vary, from rods two to three times as long as broad, to filaments from twenty to thirty times that length. No spontaneous movements were observed. After the first day a delicate, iridescent membrane rests upon the surface of the culture, which consists of bacilli varying in length from 2 micromillimeters to long filaments. On the second day this mycoderma contains bacilli which, when stained, contained unstained places at certain intervals, representing spores in process of formation. On the third some short rods may be seen with both extremities unstained, and many which take the stain feebly, if at all.

The colonies on gelatine plates are round, with sharply defined periphery and finely punctated disk. Within two or three days a dark line appears not far from and parallel with the periphery, giving the colony a ringed aspect. After becoming visible to the naked eye as yellowish-white, opaque points, they do not grow much larger. The

gelatine is not liquefied. In tubes of gelatine the colonies in the track of the needle grow very little. When numerous they coalesce to form an opaque line. On the surface a pearly, elevated patch, with irregular outline, is formed, and this, together with the growth in the needle track gives the whole the appearance of a nail or large tack, an appearance very commonly assumed by bacterial growths which do not liquefy the medium. In coagulated blood serum the growth resembles the preceding very closely, excepting as regards the surface patch, which forms a very delicate film, gradually invading the entire surface. If sterilized milk be inoculated with the bacillus, a solid coagulum is formed within three days, with a layer of clear, watery liquid resting upon it. In cultures kept for several months, the coagulum has a gnawed appearance, as if it were being gradually dissolved around the edges. The reaction of one culture in milk a week old was found to be acid. A culture in an acid solution of Liebig's meat extract nine days old gave an alkaline reaction. On boiled potato, a gelatinous, cream-colored patch appears, becoming reddish later on. A very penetrating odor is detected in all cultures.

These few facts are given to serve as an identification of the microbe. The inoculations made on pigs produced no noticeable results.

June 4. Two pigs were inoculated by receiving subcutaneously 5^{cc} of a culture in broth inoculated May 15 from a plate culture. Both animals were well four months later.

July 1. Two pigs were inoculated by a hypodermic injection into the thighs of about 4^{cc} of a mixture made by adding a portion of a potato culture inoculated June 25 to a culture in meat broth inoculated June 22. Both animals remained well.

Beginning with June 29, two other pigs were fed each day cultures from potato, milk, and broth until July 10. On some days they were fed twice and in a manner similar to that described in the preceding experiments. No results.

One rabbit and about five mice remained well after inoculation.

A FEW SUGGESTIONS AS TO METHODS OF WORK.

A collecting pipette.—It is frequently necessary to carry material, such as blood and pathological effusions, for some distance before culture media can be inoculated therewith. This is more especially true of *post mortem* examinations made in the field at some distance from the working laboratory; or there may be a want of time in making and studying cultures of all the material on hand. Under such circumstances it becomes necessary to collect and preserve the material free from contamination until it is to be studied by cultivation, &c.

A very simple and easily-constructed apparatus for this purpose is the pipette figured on Plate II, Fig. 1. An ordinary pipette (see preceding Report, Plate XIII, p. 232) is heated at a point directly below the glass wool plug so as to form a constriction at that point.* In preparing such a pipette it is always advisable to make the capacity of the chamber below the constriction greater than that of the rubber bulb. The danger of aspirating a portion of the liquid into the glass wool plug above the constriction is thus avoided, even when the bulb is compressed to its maximum. When the pipette is to be employed to collect, for example, some of the effusion into the thoracic cavity, the bulb is first adjusted so as to create a slight increase of pressure within the pipette, the sealed end is broken with flamed

* While the constriction is being made the upper part of the pipette bearing the rubber bulb may be bent until it forms an acute angle with the lower portion. The length of the entire pipette may be shortened in this way to facilitate packing.

forceps, and the capillary portion rapidly drawn through the flame two or three times. The bulb is then compressed in proportion to the amount of liquid present, and the capillary extremity introduced into the liquid. As the fingers relax their hold upon the bulb, the liquid slowly rises in the pipette until the bulb has assumed its original form. The capillary end is readily sealed in the following manner: A few drops are forced out, and then the pressure on the bulb is relaxed. The liquid will retreat in the capillary portion and leave the free end empty. This empty portion, which should not exceed 1^{cm} in length, is thrust into the flame, and thus the tube is rapidly sealed. In the ordinary vacuum tube the liquid cannot be made to leave the open end of the capillary prolongation. The flame must first vaporize this liquid, which causes a constant flow of steam, interfering and often absolutely preventing the perfect closure of the tube. Frequently the delicate tube is shattered before it is sealed. Another disadvantage of the vacuum tube consists in the fact that it must always be opened below the surface of the liquid. This necessitates the introduction of forceps into the liquid and the proximity of the hand holding them, both possible sources of contamination from without. With the pipette, the hand manipulates the bulb while holding and directing it at the same time, and thus remains at least 6 inches from the liquid to be aspirated. The difficulty of collecting fluid from the thoracic cavity in ordinary vacuum tubes is almost insurmountable when the liquid has gravitated near the spinal column, and the only means of approach is through the aperture left by the removal of the sternum. The pipette easily overcomes the difficulty, as the capillary portion may be drawn out from 6 to 8 inches without any danger of breaking in transportation. Another difficulty of the vacuum tube is the rapidity with which the liquid rushes in. Air-bubbles are apt to be carried in, especially when the quantity has been exhausted before the tube has become filled. The rapidity with which it enters the pipette is regulated by the fingers on the bulb, and the amount of compression to which the bulb is previously subjected must be proportioned to the amount of liquid at our disposal. The danger from air-bubbles is thus entirely avoided. There is practically no danger from any contamination whatever, connected with the pipette, for the only source, the air, is cut off by the outflow when the sealed end is broken, as explained above, and by the subsequent compression of the bulb, which forces out at least one-half of the contained sterilized air.

To sterilize the pipette, the rubber bulb is removed, the pipette is seized with a pair of tongs, the capillary extremity sealed, and the entire tube thoroughly heated in the Bunsen flame. As this takes some time a large number may be sterilized at once by sealing the capillary ends and exposing them in a sheet-iron box to a dry heat of 150° to 170° C. for two or three hours.

When the pipettes have been filled and the capillary extremity sealed, which can be ascertained by compressing the bulb, the constricted portion of the tube (Fig. 1, *a*) is melted in the flame and the upper portion bearing the bulb and plug is removed. There will then be left a tube (Fig. 2) containing the liquid, sealed at both ends which may be conveyed any distance and kept indefinitely. It is very frequently possible to transfer the pipettes entire. In this case the pipettes must be carefully packed with the bulbs left on the tubes, and they should be carried in the hand. Any amount of jolting cannot force the liquid above the constriction. The pipettes may then be regarded as small culture tubes in which the liquid medium is very rich in albumen. Any bacteria present will multiply, especially if the pipette is placed in a thermostat,

and are more easily detected in a few days. Sometimes when the collected serous fluid coagulates, individual colonies of bacteria become visible to the naked eye, as in nutritive gelatine. As it is usually desirable to inoculate some culture medium, the best method of obtaining fluid from the pipette, when left entire after being filled, would be to discharge as much as is needed from the capillary end and reseal for further use. To do this it is necessary to sterilize the capillary portion, which is best accomplished by Hüppe's method (*Bacterienforschung*, p. 97). It is placed in .1-per-cent. solution of mercuric chloride for from ten to fifteen minutes. This is washed away with alcohol, which in turn is removed with ether. After this has evaporated, the sealed end is broken with sterilized forceps, and the few first drops rejected. When a sufficient quantity has been removed, the pipette is again sealed as above described. When ordinary vacuum tubes have once been opened, or the pipette sealed at the constriction, the contents can not be very well preserved by resealing, but the use of the pipette in the manner described enables us to make a number of subsequent inoculations from the same source, often invaluable in controlling errors.

Pipettes and capillary tubes have been used for various purposes in the study of micro-organisms. Salomonsen, as early as 1876, used capillary tubes to study and isolate putrefactive bacteria in blood and to inoculate culture liquids from these (*Bot. Zeitung*, 1880, p. 481). Cornil and Babes (*Les bactéries*, &c., 1885, p. 55) describe the preparation and use of pipettes such as we have dwelt upon. The liquid is, however, aspirated, no bulb being used. "The liquid immediately rises in the tube by capillarity or by reason of the rarefaction of the air in its interior." Without a rubber bulb the aspirated liquid will discharge itself continually and interfere with sealing. They also describe a pipette *à col tordu*, which is prepared by making the constriction as at a^3, Plate II, Fig. 1, and twisting the two portions of the tube on each other, thus forming a narrow spiral tube instead of a straight one. This may be more desirable for some purposes than the one figured by us, but it is more difficult to seal.

A simple culture cell.—It is often desirable to make a series of pure cultures of bacteria on cover glasses, which may be stained and mounted for reference. The ordinary cell is constructed out of a concave slide or a glass ring cemented to a slide upon which the cover glass rests. From this a drop of culture fluid is suspended. We have found that to keep the drop hanging from the center of the cover is only a fiction of the books, unless the quantity of the liquid be very small indeed. A drop from a capillary pipette invariably spread over the entire cover glass and came in contact with the slide or glass ring, thus destroying all chances for the purity of the culture. We have succeeded in keeping the drop centered by using only so much liquid as can be conveyed on a small loop of platinum wire. Another disadvantage arises from the necessity of sealing the cell. The cover becomes coated with the vaseline wax, or other substance used, and is unfit for mounting.

The culture cell (Plate II, Fig. 3) which we think will obviate these difficulties consists of a solid watchglass, *a*, to which is fitted a cover of ordinary glass, *b*. To the middle of the lower surface of this cover a small block of glass, *d*, is fastened with Canada balsam or white zinc cement. These blocks are readily obtained by cutting up window glass into pieces 3^{mm} square. The cover glass *c*, upon which the culture is to be made, is attached at the proper time to the lowest surface of the block on which a minute quantity of vaseline has been spread. The course to be adopted in preparing the cell culture may be varied to

suit the individual taste and skill in manipulation. The important thing to be secured is freedom from contamination during the operation. We think the following course safe. The watch glasses are gently flamed, as well as the covers, and placed under bell glasses. When cooled, the edge of each watch glass is covered with a little vaseline, a few drops of distilled water placed in the bottom, some vaseline put on the glass block *d*, and the cover put in place temporarily. The covered cells are thus protected from dust, and ready to receive the cover glasses when prepared. Into a culture tube containing about 10^{cc} of some sterile nutritive liquid is sown about one drop of some pure liquid culture or a minute portion from a culture on some solid substratum, and thoroughly shaken up. Cover glasses previously sterilized by a continuous heat of about 150° C. for several hours, or drawn through the flame of a Bunsen burner,* are placed under a bell-jar on a sterilized plate, and when cool a drop of the dilution is placed on each cover by means of a sterilized pipette (see First Annual Report, p. 232, Plate XIII). The covers are then seized with flamed forceps and placed against the block of glass attached to the cell-cover and the latter replaced. The cover glass easily adheres with the aid of the vaseline. If the cell does not prove air-tight, the water rapidly evaporates, the cell dries out, and is ruined. In this case the cells may be placed one above the other and a small bell-glass placed over all, reducing the evaporation to a minimum, especially if the walls of the bell-jar have been previously sprayed. If too much water has been placed in the watch-glass the heat of the incubator will cause it to vaporize and condense on the cover, where it may accumulate after several days to such an extent as to float away the cover glass. Two or three drops will be sufficient. At stated intervals one or two cover glasses may be removed and either examined unstained, or dried, stained, and mounted. A series of cultures of different ages may thus be mounted *in toto*. The application of this cell is quite limited, but it serves the purpose for which it was designed admirably well. We have traced the growth and spore formation of the easily recognized *bacillus subtilis* as well as a number of other species in this way. Contaminations occurred very rarely. To test the purity of the culture, it is advisable to dip a platinum wire into the drop when the cell is opened, and draw it across a freshly prepared gelatine plate. The uniformity in the appearance of the colonies resulting therefrom guarantees the purity of the culture. The liquid may spread on the cover, and it certainly will if the former be chemically clean, without coming in contact with anything else. The vaseline attaching the cover glass is easily wiped from the upper surface either before or after drying and staining.

Cultures from the spleen in swine-plague.—The spleen is probably the best source whence to obtain the bacterium uncontaminated with other germs. Our method is, briefly, as follows: Inoculations were either made from this organ *in situ* or it was removed with care and placed in a dissecting pan. Occasionally a portion was removed and placed in bottles closed with a plug of cotton, which had been sterilized by dry heat, when it was impossible to make cultures immediately. In all cases of removal from the body of the animal a limited area was first scorched with a platinum spatula, an incision made into this scorched area with a flamed scalpel and a platinum wire, looped at the free end, the other being soldered into a glass rod, was dipped into this cut, moved about in it, and then plunged into the sterile nutritive fluid con-

*They are very apt to crack when heated in this way.

tained in a culture tube. Cultures in nutritive gelatine were always made parallel with liquid cultures. The surface was scorched, and a straight platinum wire, soldered to a glass rod, was made to pierce the scorched surface and moved about in the spleen tissue, then the gelatine was pierced with it. Each tube was inoculated three times in this manner, the spleen tissue being pierced each time in a different direction. Plate III, Fig. 3, shows the three needle tracks after two days, dotted with colonies of the bacterium of swine-plague.

Cultures from the blood were made in the same way. After carefully removing the sternum and the pericardium, the surface of the right ventricle was scorched, an incision made along this area, and a looped or straight platinum wire introduced, as the occasion demanded. Cultures from the lymphatic glands, from the liver, and serous exudates may be made in the same way. *Culture tubes*, used for both solid and liquid cultures, were those described in the First Annual Report of the Bureau, p. 228. They have been so invariably successful that the ordinary plugged test tube was entirely discarded, and used only for storing gelatine to be used for plate cultures.

DESCRIPTION OF PLATES I, II AND III.

ILLUSTRATING SWINE-PLAGUE AND ROUGET.

PLATE I.—Ulcerated cæcum of pig affected with swine-plague, laid open. The mucous membrane of the ileo-cæcal valve is near the center of the figure and the small intestine with the cut end tied, above. The smallest ulcers are of a uniformly yellow color; the larger ones with zones of different color; the largest, brownish or blackish in appearance.

PLATE II, FIG. 1.—Pipette with rubber bulb *c* and constriction at *a* for collecting and preserving pathological effusions; *b*, glass wool plug (x $\frac{2}{3}$). The capillary portion is drawn too large.

FIG. 2.—The same pipette with the constriction at *a* sealed in the flame, the portion containing the glass wool plug and capped with rubber bulb removed.

FIG. 3.—A simple form of culture cell; *a*, an ordinary "solid watch glass"; *b*, cover; *c*, a cover glass, attached to a small block of glass, *d*, on the lower side of the cover *b* (x $\frac{2}{3}$).

FIG. 4. Pasteur's second vaccine for *rouget;* dried on cover and stained in an aqueous solution of methyl-violet; mounted in xylol balsam; drawn with camera lucida (Abbe), Zeiss $\frac{1}{18}$ homogenous objective, ocular 2. The bacilli of *rouget* are seen among the larger bacilli as slender curves or broken lines.

FIG. 5.—Drawn same as Fig. 4 cells from a dried cover-glass preparation from the lungs of a mouse inoculated with the second vaccine. Most of the bacilli are within the protoplasm of the cells.

FIG. 6.—Culture in meat-infusion peptone gelatine inoculated from plate cultures of Pasteur's vaccine I, twelve days old. The appearance is that of a row of faintly circumscribed, cloud-like masses in the track of the needle, which is itself scarcely visible as a delicate line. No liquefaction perceptible.

PLATE III, FIG. 1. From a cover-glass preparation of the spleen of a pig affected with swine-plague. Drawn with Abbe's camera lucida $\frac{1}{18}$ homogenous, ocular 2 (x 800); *a*, red blood corpuscles distorted; *b*, the bacteria of swine-plague.

FIG. 2.—Various colonies from gelatine plates; *a*, imbedded in the gelatine layer; *b*, growing on the surface of the layer *c*, *c'*, *c''*, growing between the gelatine layer and the glass plate; *a*, *b*, about five days old (x 73); *c*, *c'*, *c''*, about seven days old (x 100); *a* fails to give the idea of solidity. The colony itself is either spherical or spheroidal; *b*, on the other hand, is flattened; *c*, *c'*, *c''*, the margins gradually attenuate and become lost to view.

FIG. 3.—Nutritive gelatine inoculated with a platinum wire from the spleen of pig No. 114; about three days old. Natural size. *a*. The colonies developed from individual microbes.

DESCRIPTION OF PLATES IV TO VII.

TO ILLUSTRATE THE APPEARANCES PRESENTED BY THE GROWTH OF BACILLUS LUTEUS (SUIS) IN DIFFERENT MEDIA.

PLATE IV.—Colonies of the bacillus on gelatine plates.

FIG. 1 represents the appearance of a plate culture about twenty-four hours after preparation. Some colonies much further advanced than others (natural size).

FIG. 2.—A colony about one day old (x 50).

FIG. 3.—A colony somewhat older, presenting very fine radial striæ and with margin no longer regular (x 50).

FIG. 4.—A colony which has reached the surface of the gelatine layer and produced a hemispherical depression by liquefying the gelatine. The motile bacilli have moved in part to the outermost limit of the liquefied area (x 17).

PLATE V.—Figs. 1, 2, and 3 represent cultures in beef extract of *bacillus luteus* of different stages.

FIG. 1.—About two days old.

FIG. 2.—Eleven days old.

FIG. 3.—Thirty-seven days old.

FIG. 4.—A culture in sterilized milk about ten days old, showing the separation of the solid and liquid portion and the coloring of the latter.

FIG. 5.—Represents a culture in milk about forty-five days old. The casein has been almost consumed, a small remnant being left in the bottom of the tube. The liquid portion has become deeply tinted; a whitish membrane with yellow patches rests on the surface of the liquid.

FIG. 6.—Growth of the bacillus on agar-agar, about four days old; the substratum has already assumed a yellowish tint.

PLATE VI.—Figs. 1, 2, 3, 4, and 5 represent successive stages of the growth of *bacillus luteus* in meat infusion peptone gelatine.

FIG. 1.—About twenty hours after inoculation; the upper portion of the needle track represented by a liquefied conical mass.

FIG. 2.—About forty-four hours old; the liquefied area has increased considerably; the entire surface layer has become liquid to a depth of 3 to 4^{mm}.

FIG. 3.—About sixty-eight hours old; Fig. 4 four days old, and Fig. 5 seven days old, illustrate the downward extension of the liquefying process until most of the gelatine has become involved. From Fig. 3 on the bacillus begins to form a surface membrane upon the liquid gelatine.

FIG. 6.—Culture in coagulated blood serum about nineteen days old. The different stages of growth resemble those on gelatine in a general way. Nearly all of the serum has become liquid; the upper layer has assumed a green color and is now covered with a brittle, white, bacillar membrane.

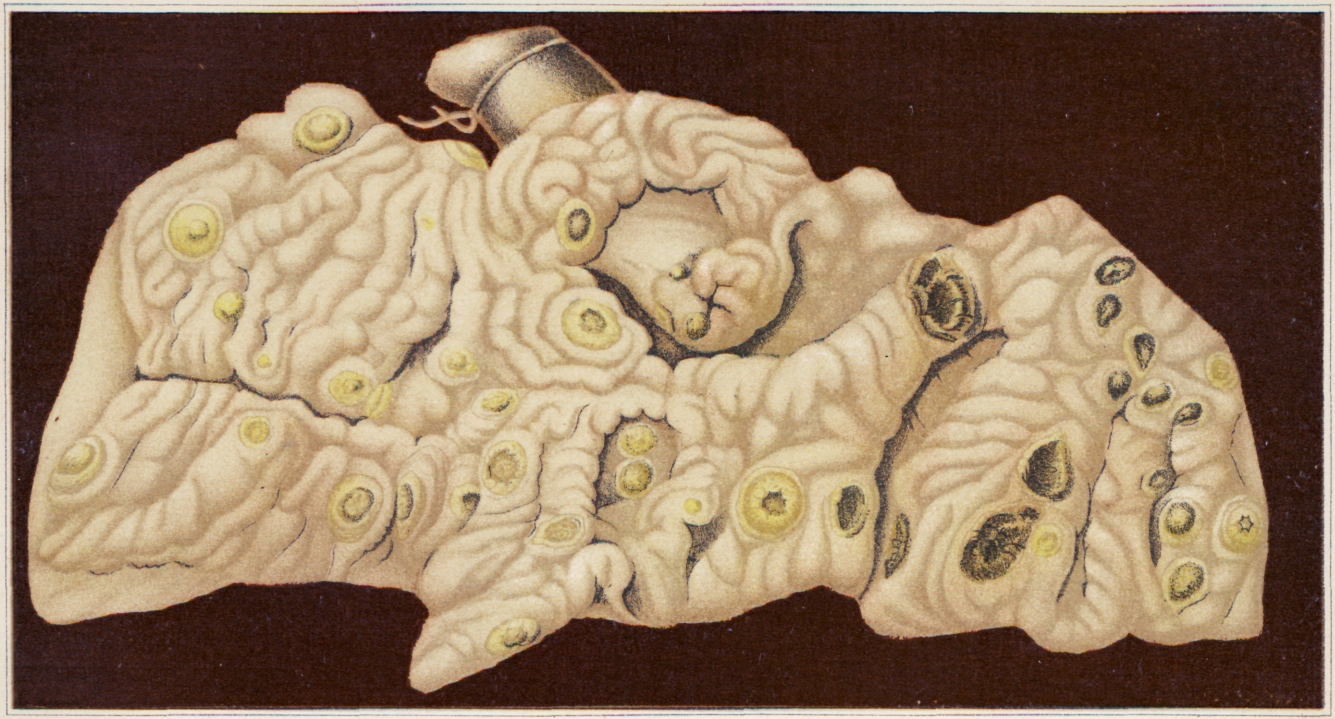
FIG. 7.—Represents a blood serum culture about forty days old. The entire mass is liquefied. A whitish deposit rests upon the bottom of the tube and a membrane covers the surface of the serum. The color being diffused through more liquid, is not so deep as that of Fig. 6.

PLATE VII.—Growth of the *bacillus luteus* (*suis*) on boiled potato.

FIG. 1.—Potato twenty hours after inoculation. A faint rose color about the track of the needle fading away into the surrounding surface.

FIG. 2.—Same culture about five days old; the growth appears as a narrow, elevated, reddish strip with wavy margins.

FIGS. 3 and 4.—Potato cultures both about five days old. In Fig. 3 the change of color from a reddish to a dirty greenish tint is but partially completed. In Fig. 4 the growth has spread over the entire surface of the potato and discolored it uniformly. A few drops of sterile veal peptone had been added before inoculating. This probably aided the spontaneous movement of the bacilli and accounts for the invasion of the entire surface.

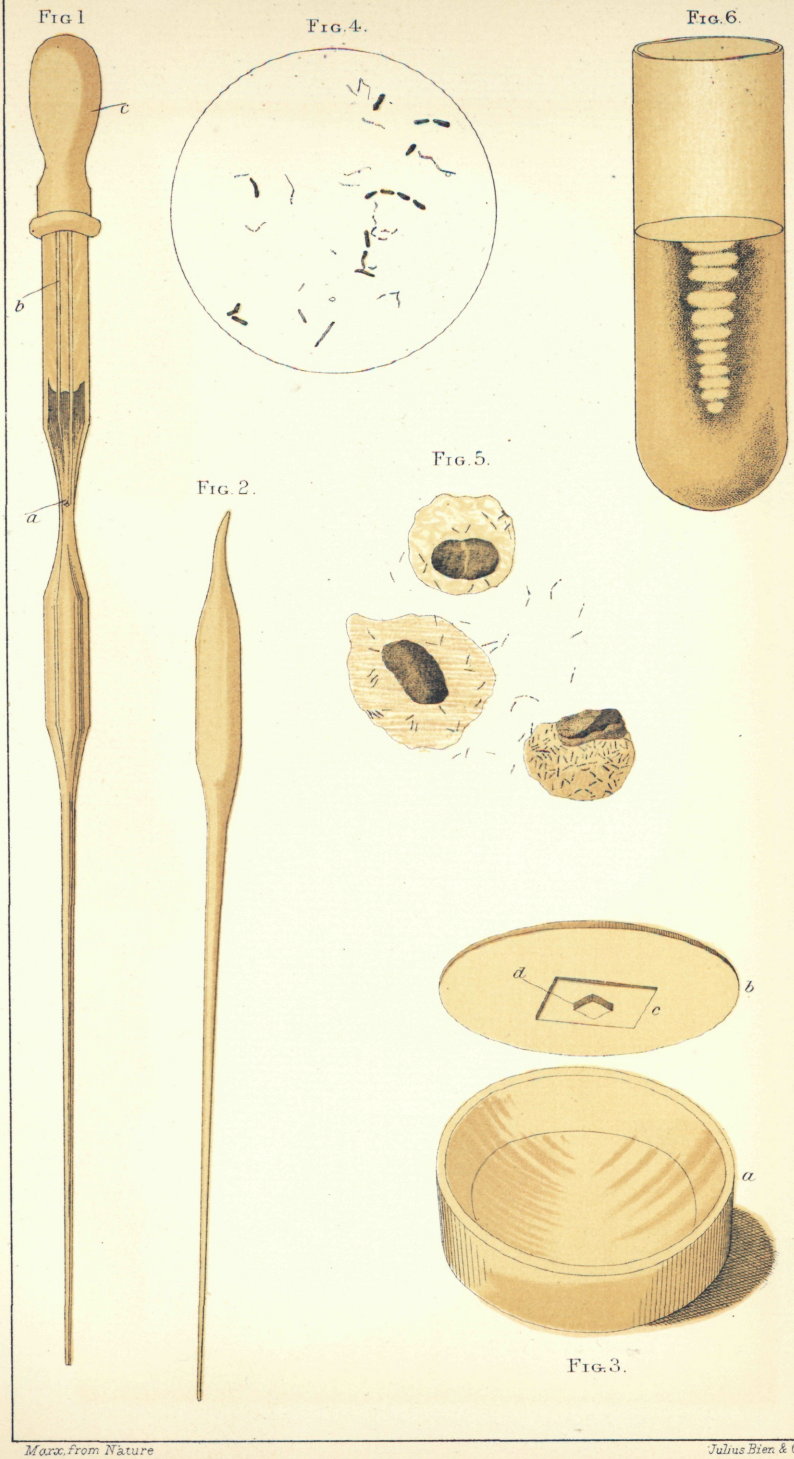


Marx, from Nature

Julius Bien & Co. Lith.

ULCERATED CAECUM.

(Swine-Plague.)



Maxx. from Nature

Julius Bien & Co. Lith.

SWINE-PLAGUE

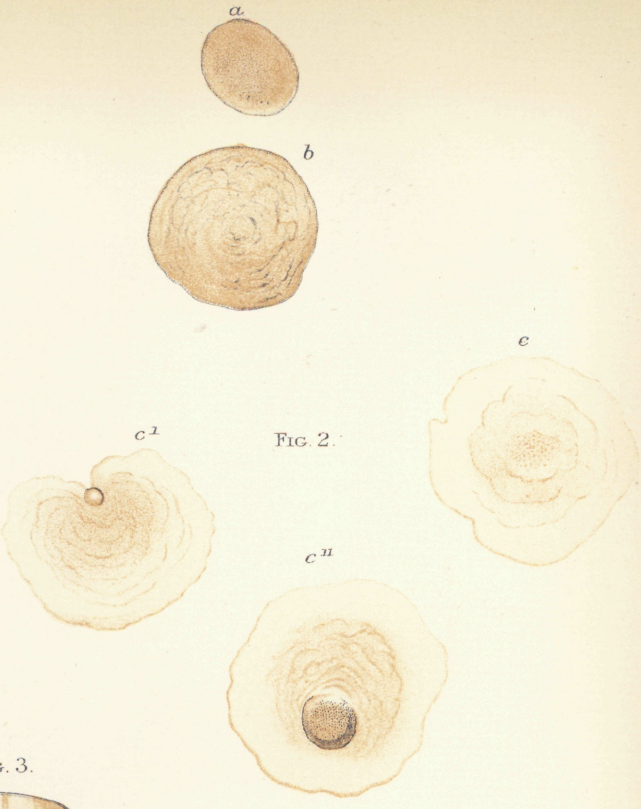


FIG. 2.

FIG. 3.

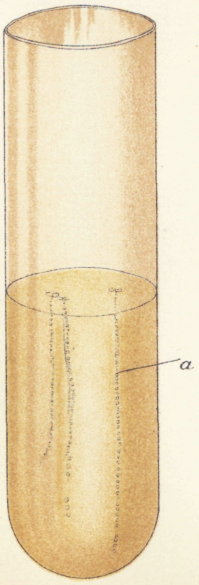
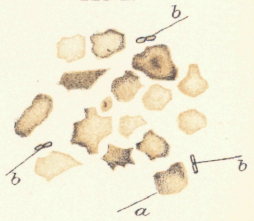


FIG. 1.



Marx, from Nature

Julius Bien & Co Lith.

SWINE-PLAGUE.

Fig. 1.

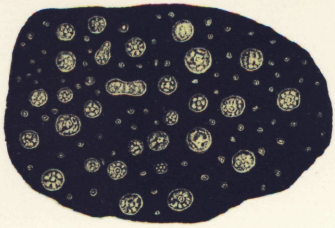
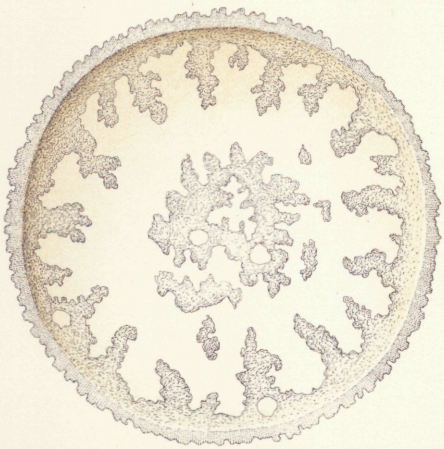


Fig. 3.

Fig. 2.

Fig. 4.



Marx, from Nature

Julius Bien & Co Lith.

BACILLUS LUTEUS (SUIS)

FIG. 1.

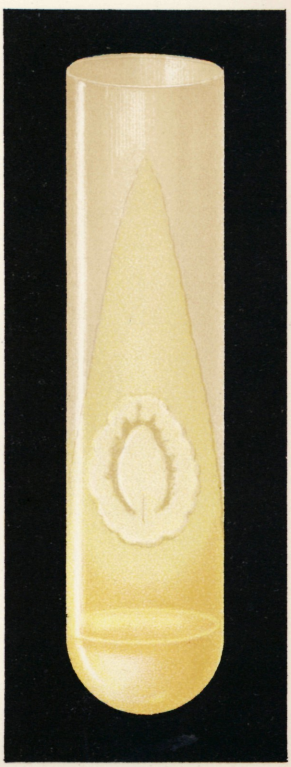
FIG. 2.

FIG. 3.

FIG 4.

FIG. 5.

FIG. 6.



Marx, from Nature *Julius Bien & Co. Lith.*

BACILLUS LUTEUS (SUIS)

Fig. 1.

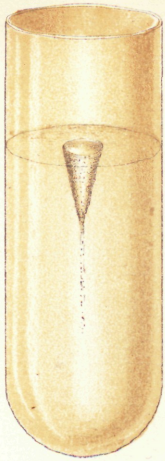


Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Marx from Nature

Julius Bien & Co Lith.

BACILLUS LUTEUS (SUIS)

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

Marx, from Nature *Julius Bien & Co Lith.*

BACILLUS LUTEUS (SUIS)

GEOGRAPHICAL DISTRIBUTION OF SOUTHERN CATTLE FEVER.

Much time has been given to the collection of information in regard to the district permanently infected with Southern cattle fever, and the remarks made in the First Annual Report of this Bureau as to the method adopted and the difficulties encountered apply equally well to the work of the past year. The section that has been investigated during the year is in many parts very sparsely settled; in some portions of it there has been very little movement of cattle, and, consequently, there was very little information to be obtained; in other parts the continual driving of cattle from the Gulf coast has often made it very hard to discriminate between infection brought with these cattle and permanent infection, which may exist for year after year without fresh importation. It is believed that the results given below are as nearly correct as any that can be obtained at present.

ARKANSAS.

The unusual obstacles encountered in this State in collecting accurate information made it necessary to have two distinct investigations made across the State by different inspectors. The facts which they collected, while not in all cases indicating the same conclusion, have supplemented each other to such an extent that the line of the infected district may now be traced with approximate accuracy.

Beginning at the Mississippi River, it was found that the native cattle in Mississippi County became infected by cattle driven in from farther south, and died from Southern fever. Mr. W. Burroughs informed Dr. Trumbower that he had purchased cattle in Northeast Arkansas, in the counties of Craighead, Clay, Poinsett, and Greene, and had driven them to Bates and Polk Counties, in Missouri, in the months of July and August, that he had done this for the past six years, driving as many as five or six herds each year without causing any harm to native Missouri cattle. Mr. Reed said, "I don't want any cattle from south of Poinsett County." A. T. Martin, of West Plains, Mo., introduced Southern fever several years ago with cattle from Jackson County. W. M. Summers has been dealing in Arkansas cattle since 1874. He has purchased them in Poinsett, Craighead, Greene, Clay, Lawrence, Independence, Izard, Fulton, Baxter, Randolph, and Jackson Counties, but never knew them to convey the disease to Northern stock. He has never heard of any trouble arising from cattle that came from Mississippi County, Arkansas, or from Pemiscot or Dunklin Counties, Missouri. Mr. Moore, a cattle dealer of the same place, said he always had trouble with cattle that were brought from south of Batesville, Ark. To illustrate this, he said that several years ago he purchased 28 head of cattle 3 miles south of Batesville and drove them home; soon afterwards a number of the native cattle sickened and died with Southern fever. Dr. Moore, in 1882, purchased 70 or 80 head of cattle in White County and drove them to a range located 6 miles southeast of West Plains, Mo. This was in the month of July. He kept them there two weeks and then drove them into Northern Missouri. Soon after he left the range at West Plains, the native cattle died of Southern fever. In Vanndale and Wittsburg, towns in Cross County, the native cattle still appeared susceptible to the disease. In Saint Francis County, in the vicinity of Forest City and Wheetley, the ranges are permanently infected, and have

been for a number of years, and many of the native cattle are still susceptible and die during the summer months. At Batesville, in Independence County, and in the vicinity of Kensett, Judsonia, and Searcy, of White County, it was learned that animals brought from farther north almost always contracted this malady, and a large proportion of them died. A drove of cattle from Prairie County was taken to Marion County in 1878, and produced the disease among native cattle there. At Carlisle, Lonoke County, it was found that there was permanent infection which had existed in that vicinity for many years. In 1881, a herd of cattle from Faulkner County and adjoining districts were taken to Boone County and caused infection of native cattle there. At Saint Joe, Searcy County, 4 miles northwest of Marshall, in the same county, native cattle are infected and die as the result of feeding on pastures infected by Southern stock. No signs of permanent infection were discovered at these places. Cattle from Conway and Pope Counties caused outbreaks of Southern fever in Boone County in 1881 and 1882. Cattle from Jackson County caused disease in Boone and Carroll Counties in 1880 and 1882. A herd from Franklin County also infected animals in Carroll County. Crawford and Sebastian Counties are also infected, and animals taken to these counties from farther north contract the disease.

The reports from Washington, Madison, Boone, and Carroll Counties are more conflicting. They indicate that many places in these counties are permanently infected, and that loss of cattle occurs even when no new infection is brought there from year to year by Southern cattle. Other reports from Eureka, in Carroll County, and from Prairie Grove and Fayetteville, in Washington County, and from Bentonville, in Benton County, indicates that the pastures at these places are permanently infected, and that cattle contract the disease from grazing upon them, though no fresh infection has been introduced during the year. Cattle from Boonsborough, Washington County, carried the disease to Benton County some years ago. For many years cattle from the Indian Territory and Texas have been driven through Northwestern Arkansas on their way to market, and it appears that this constant renewal of infection has carried the northern limit of the infected district considerably farther northward in this part of the State than it is farther east.

Taking into consideration the facts that have been given above and many others that for lack of space cannot be enumerated, it would appear that the northern line of infection leaves the Mississippi River at about the southern boundary line of Mississippi County. This is very nearly opposite the point in Tennessee, on the Mississippi River, to which the boundary line of the infected district was traced in that State. Going westward, this line would appear to follow the southern boundary line of Poinsett County, crossing Jackson and Independent Counties, going a few miles north of Batesville, and then proceeds westward through Stone and Searcy Counties, leaving Mountain View and Marshall a few miles to the north. It then takes a more decidedly northwestern direction, crossing Newton and Carroll Counties, to Eureka, and is then directed westward to Bentonville, and from this town goes to the extreme northwestern corner of the State.

We have not been able to learn of any infected places north of such a line, and, as has already been stated, there are many localities south of this line which are not permanently infected. Our endeavor has been in drawing this line, as it was in drawing the line from the Atlantic Ocean to the Mississippi River, to include all the permanently infected places; and while this may do some injustice to places south of the line

which are not permanently infected, it seems to be the only way in which a line can be drawn which will give a correct idea of the northern boundary of the infected district.

INDIAN TERRITORY.

The facts that we have been able to collect in regard to Southern fever in the Indian Territory are mostly in regard to instances of the occurrence of this disease in the northeastern part of the Territory, principally in the Cherokee and Creek Counties. Owing to the promiscuous driving of cattle through this section, it has been very difficult to get exact information as to the cause of the disease in many of the cases. Sufficient observations of a definite nature have been recorded, however, to show that the line of infection continues in a northwesterly direction from the northwest corner of the State of Arkansas, until it reaches to within 12 or 15 miles of the Kansas State line, at a point nearly south of Chetopa. Its direction is then westward across the Cherokee country and nearly half way across the Osage country. It then takes a southwesterly direction to the Texas State line, crossing the country of the Kiowas, Comanches, and Apaches.

At the Ponca Agency the native cattle are subject to infection from cattle from farther south, and Kansas cattle which are taken to Ponca Agency do not contract Southern fever unless exposed to the infected cattle. The same appears to be true of nearly all of the territory embraced in the Cherokee outlet. In the southern part of the Osage country, and in all of the Creek country, cattle imported from Northern States are almost certain to contract this disease, while the native cattle mix with impunity with the Texas cattle.

It is reported as the general experience of stockmen in Arkansas and the Indian Territory, that long drives and close herding of cattle that are from the infected district, and are not usually susceptible to the disease, is an exciting cause of this malady, and large numbers of such animals sicken and die during such drives. This has been particularly noticed with cattle from Southeastern and Eastern Arkansas which have been driven from there into the Indian Territory. These cattle, though undoubtedly from an infected section, contract Southern fever during their journey, or soon after their arrival in the Territory, and many of them are lost from its effects. Facts of this same nature, observed in other sections of the country, have been referred to in former reports.

TEXAS.

For more than a year we have been collecting information in regard to the occurrence of Southern fever in the State of Texas, and such other data as would serve to indicate the extent of the district which may be considered as permanently infected. The lines of evidence to which we have directed our attention are similar to those which have already been mentioned in our investigation of this matter in other States, and for the information of those who are particularly interested in this question, as it applies to Texas, I would state that there are six classes of facts which serve as a basis for deciding this question. All of these are based on the three well-established conclusions, (1) that cattle from the permanently infected district which are taken beyond this district, and where the infection does not exist, contaminate pastures, and in that way disseminate the disease among the native cattle in the non-infected district; (2) that cattle from the non-infected district which are taken

into the infected district contract the disease and suffer with the same symptoms as those which contract it in the non-infected district from exposure to the infection of Southern cattle; and (3) that the native cattle of the infected districts enjoy an immunity from this disease, and, as a rule, do not suffer from it, either on their native pastures or when they have been driven into the non-infected section. In regard to any place in the infected district we should be able to establish one or more of the following facts:

(1) Cattle from here have caused disease.

(2) The native cattle of this section do not contract the disease.

(3) Cattle brought to this section from the non-infected section of the country contract the disease.

In regard to any place in the non-infected district we should be able to establish one or more of the following facts:

(1) Cattle from here do not cause the disease.

(2) The native cattle of this section, when pastured upon ranges over which cattle from the infected district have recently grazed, contract the disease.

(3) Cattle brought to this section from non-infected parts of the country do not contract the disease unless they have grazed upon pastures recently infected by Southern cattle.

There is a doubt in the minds of many cattlemen whether Texas cattle are dangerous from all that section of the State in which cattle brought from the Northern States contract the disease known as acclimation fever. In the States farther east, that have been pretty thoroughly investigated, we have not found that there was any material difference in the district indicated by these two classes of facts. We have found that wherever cattle suffered from acclimation fever, there the native cattle were capable of disseminating the disease. It is true that, as we approach the extreme boundary line of the infected district there are many localities which are not infected, and, even in those that are infected, the native cattle have not secured immunity, and consequently do not disseminate the disease. There is, consequently, a belt of country along this boundary line on which but a small proportion of the cattle are dangerous to those from farther north or west, but this belt is not many miles wide, and some of the cattle in it may be considered capable of infecting others. The emergencies which have arisen during the past year in regard to the movement of cattle from Texas, have made it very important that a preliminary line at least should be indicated across the State of Texas, which shall show the counties of the State that all attainable information leads us to believe are free from any permanent infection, and from which the cattle are in no sense dangerous to those of any other section of the country.

The following facts were collected by Mr. R. C. Saunders, jr., from different stock owners who have had experience with cattle in Texas:

Mr. J. F. Evans, of Sherman, Grayson County, Texas, stated that he had brought 160 fine cattle from Northern States to his ranch in Grayson County, near Sherman, and that one-half of these cattle have died of Southern cattle fever. He also stated that he had taken a number of fine cattle from the North to his ranch in the Pan-handle, and none of them had died from the disease. He has on several occasions driven large numbers of cattle from Erath, Grayson, Palo Pinto, Hunt, Fannin, Denton, Ellis, Hill, and Nevada Counties to his ranch in Donley County, and states that no disease was caused by them. In the summer of 1881 he took 6,000 cattle from Grayson, Hunt, Tarrant, and Denton Counties to his ranch in Donley County, and no disease re-

sulted. Mr. Evans also stated that the native cattle in counties from which these herds were driven do not contract the disease from the cattle that are driven from the extreme southern counties of the State.

Mr. C. W. Smith, of Gainesville, Cook County, stated that in the spring of 1880 he had driven 300 cattle from his ranch in Cottle County to Gainesville, and that on the road they had crossed the Southern Texas trail, and by this exposure 180 head were infected and died of Southern fever.

Mr. C. C. Slaughter, of Dallas, Dallas County, stated that in May and June, 1884, he drove 7,000 cattle from his ranch in Dawson County, on the Colorado River, to the Cheyenne and Arapahoe Reservation in the Indian Territory. They came in contact with a herd from Southern Texas, and 200 of the 7,000 died of Southern fever. He also stated that cattle from the coast country will infect cattle on his range in Dawson County, and that fine cattle from the Northern States do not contract the disease on his ranch unless infected by Southern cattle.

Mr. Rue, of Sherman, Grayson County, stated that in 1873 he drove 1,000 cattle from the Concho River, in Tom Green County, to Pettis County, Missouri, and that they infected the native Missouri cattle.

Mr. J. T. Davis, of Colorado City, Mitchell County, said that in the spring of 1884 he bought 12 Kentucky bulls and took 10 of them to his ranch 60 miles north of Colorado City. Not one of these died. The remaining 2 were taken to his ranch in Falls County, and both died from Southern fever.

The Magnolia Cattle Company, of Colorado City, Mitchell County, stated that in the spring of 1884, they had taken 285 bulls from Illinois to their ranch in Mitchell and Howard Counties, and that but 3 of the whole number were lost during the summer.

Mr. J. A. Peacock, of San Angelo, Tom Green County, stated that he had shipped 1,000 cattle from his range on the head of the Concho River, in Tom Green County, to Pecos Station, and had then driven them on the trail up the Pecos River, with 800 cattle that had been shipped from De Witt County, Texas. During the drive from Pecos Station to Fort Sumner, N. Mex., 400 of the Tom Green cattle died of Southern fever, being infected by the 800 cattle from De Witt County. This occurred in June, 1884.

Mr. J. D. Merchant, of Baird, Callahan County, stated that he had been introducing fine cattle from the Eastern States into Callahan County for a number of years, and that he has never lost less than 33 per cent. of all such imported cattle. From 1873 to 1876 he had brought a number of fine cattle into Denton County, and that there he lost about 50 per cent. of them.

Mr. J. W. Snyder, of Cheyenne, Wyo., purchased 350 cattle in the spring of 1884 from Gonzales County, Texas, which were shipped direct from Luling on the Sunset route to Wyoming. They infected a herd of 450 Wyoming cattle, from which 80 died. Mr. Snyder believes that cattle might be driven from any part of Texas to Wyoming with perfect safety to Wyoming cattle, but that they cannot be shipped by rail from the infected portions of the State without causing infection.

Mr. Glascoe, of Fort Worth, said that he had a ranch 130 miles west of Wichita Falls, in King County, on which were 1,000 cattle. The trail went through a portion of his ranch over which cattle from Southern Texas were driven, and his own herd was infected from this trail, causing the death of 40 animals.

Mr. J. E. Stevens, of Thurston, Pecos County, stated that he had a ranch 30 miles north of Thurston, on which he placed 140 cattle from

Fayette County, Missouri, in December, 1883. Southern fever developed among these animals from February to May, 1884, and 80 of them died. Mr. Stevens stated that these cattle certainly died from Southern fever, and that from a third to a half of all northern cattle taken to his ranch in this county are sure to die.

The Matador Cattle Company, of Colorado City, stated that in June, 1880, 400 half-breeds were driven from their ranch in Motley and Cottle Counties to Gainesville and there shipped North. These cattle crossed the Southern trail on their way and 60 of them died from Southern fever.

Mr. J. M. Dougherty, of Denton, Denton County, bought 22 head of cattle from Cooper County, in Missouri, in December, 1877, and during the summer of 1878, 18 of these animals died from Southern fever.

Mr. Charles Goodnight, of Clarendon, Donley County, whose ranch is located in Armstrong County, stated that about 100 cattle from his herd were exposed to a trail over which had passed 1,500 cattle in the early summer that had come from near Fort Mason, Mason County, Texas. Thirty animals out of the 100 died of Southern fever. Mr. Goodnight also stated that in 1878, his native cattle were infected by a herd which came from the country on the Nueces River, west of Austin, and that 300 animals died as a consequence of this infection.

Brown & McClellan, of Clarendon, Donley County, who have a ranch in Armstrong County adjoining that of Mr. Goodnight, stated that in 1884 they brought 20 bulls from Emporia, Kans., to their ranch; that they also brought 500 cows from Tarrant, Kaufman, and Collin Counties; that these cows infected their ranch, and as a consequence 10 of the 20 bulls died of Southern fever.

Mr. J. J. Hittson, of Weathersford, Parker County, stated that in 1884, he brought 40 bulls from Missouri to a ranch in Palo Pinto County; that 20 of these contracted Southern fever and died. He also stated that Southern cattle do not infect the natives on his ranch in Stonewall and Fisher Counties.

Mr. J. M. Dawson, of San Angelo, Tom Green County, stated that in 1879 a herd in Motley County was infected by about 900 cattle, which came from San Saba and adjoining counties, and that 500 died from this infection. Mr. Dawson now has a ranch in Tom Green County, and he finds that Southern cattle will infect his native cattle. The ranch is situated on the Pecos River, 13 miles northeast of Fort Stockton. In the spring of 1884 he took 120 bulls from Missouri to his ranch in Tom Green County, and that none of these died from Southern fever until some Southern cattle passed through the ranch and infected them.

Mr. Creswell, of Dodge City, Ford County, Kansas, states that a herd of 300 cattle in Ochiltree County, Texas, was infected in the summer of 1884 by a herd of 1,200 animals from Taylor County, Texas, which passed over the range. A hundred of these cattle died as a consequence of this infection. Another company in the neutral strip lost 400 out of 1,000 cattle by infection from this same herd, which came from Taylor County. Some of the ranchmen in the Pan-handle stated that they believed no Texas cattle would cause infection which came from west of the one hundredth meridian and north of the Texas Pacific Railroad.

Mr. Towers, of Dodge City, Ford County, Kansas, stated that a herd of 450 cattle on a range in the neutral strip was infected in 1881 by a herd of cattle driven up from Lampasas County, and 100 of the herd died from Southern fever.

Mr. H. T. Groome, of Mobeetie, Tex., stated that the ranch occupied

by his company was located in Roberts, Gray, Carson, and Hutchinson Counties. A portion of the herd was infected by a herd of cattle in 1884, driven from near Colorado City, Tex. As a result of this infection 65 of the cattle died.

Mr. G. A. Brown, of Wichita Falls, had 40 cattle in Donley County which were exposed to 200 that came from Williamson County. Twenty of these contracted Southern fever and died.

Mr. J. W. Sacra, of Gainesville, Cook County, stated that his ranch was located in Donley and Armstrong Counties; that in the summer of 1884 he took two herds from the Concho and Colorado Rivers, in Tom Green and Concho Counties, to his ranch, and that they caused no infection. He also stated that he took 500 animals in June, 1882, from Clay County to his ranch, and no disease was produced by them.

It was stated that Messrs. Gunter & Munson, of Sherman, brought, during the years 1879 to 1882, 300 fine bulls from Northern States to Grayson County, and that they lost more than half of them from Southern fever.

Mr. S. Dyer, of Briscoe County, near Paloduro, lost 100 Hereford cattle in 1884 by infection from a herd from Southern Texas.

Mr. W. Dyer, of Hall County, near Paloduro, lost 300 cattle in 1880 from the same cause.

Mr. W. C. Harris, of San Angelo, Tom Green County, has a ranch 15 miles west of San Angelo. In the winter of 1883 Mr. Harris brought 30 bulls to his ranch and these did well until he put a herd from Frio County upon the same ranch; as a consequence of this they contracted Southern fever and 15 died, but none of the natives raised in Tom Green County died from this infection. Mr. Harris and Mr. Peacock both stated that it was perfectly safe to bring cattle from the Northern and Eastern States to Tom Green County, provided they were not allowed to come in contact with a ranch infected by cattle from the southern part of the State.

Colonel Young, of Fort Worth, stated that of 100 fine bulls taken to his ranch in Garza County at various times in recent years he has only 15 or 20 left, and that the majority of these have died from Southern fever.

Mr. T. Odham, of Wichita Falls, has a ranch in Gray and Wheeler Counties. A part of his herd in the summer of 1884 strayed on a trail that was infected by cattle from the country around Fort Worth and west of it. Forty animals died from this infection.

As the information given above was not considered sufficient upon which to base even a preliminary line locating the extreme boundary of the permanently infected district, the following circular was issued in April, 1885:

DEPARTMENT OF AGRICULTURE,
BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., April 18, 1885.

Important to Texas cattle-owners:

My attention has recently been directed to the fact that various States and Territories have prohibited the introduction of Texas cattle, because of the alleged danger that they will communicate a fatal disease to the native cattle of such States and Territories. Such prohibition is very detrimental to the cattle industry of the whole State of Texas, and I am informed by the Chief of the Bureau of Animal Industry and by many others acquainted with the subject that the cattle from a considerable part of this State do not communicate such disease and are not sources of danger to the cattle of other States.

Therefore to secure reliable and abundant information as to the limits of that part of Texas from which cattle may be safely taken to other States without restrictions, I hereby request the cattlemen of the following-named counties to send answers to the

questions hereto appended, directed to the Bureau of Animal Industry, Department of Agriculture, Washington, D. C.

Counties of Archer, Bandera, Baylor, Brown, Callahan, Clay, Coleman, Comanche, Concho, Cooke, Cottle, Crocket, Denton, Eastland, Edwards, Erath, Fisher, Gillespie, Greer, Hamilton, Hardeman, Haskell, Hood, Jack, Jones, Kent, Kerr, Kimble, Kinney, King, Knox, Lampasas, Llano, McCulloch, Mason, Maverick, Menard, Mitchell, Montague, Nolan, Palo Pinto, Parker, Pecos, Runnels, San Saba, Scurry, Shackelford, Somervell, Stephens, Stonewall, Tarrant, Taylor, Throckmorton, Tom Green, Uvalde, Wichita, Wilbarger, Wise, Young.

1. Have you purchased any bulls or other cattle, or do you know of any that have been brought from north of the south line of Kansas to your vicinity or to any part of any of the counties named above? If so, state the number, the location as near as possible to which they were taken, and the number, if any, which died of acclimatization fever.

2. Do you know of any cases in which cattle from the eastern counties of Texas have been taken to the counties named above in the spring or summer months and allowed to pasture on the same ranges with the cattle native to those counties? If so, state if any disease occurred among the native cattle, and give symptoms and numbers affected as far as possible.

If the cattlemen of the district referred to unite in sending this information at once it is hoped that it will be possible to secure modifications of the restrictions now placed upon the Texas cattle trade to such an extent as to bring great relief.

Very respectfully,

NORMAN J. COLMAN,
Commissioner of Agriculture.

In reply to this circular the following letters were received:

ARCHER COUNTY.

Mr. E. B. Harrold.—I purchased and brought into this county 42 bulls from De Witt County, Illinois. Three of these animals died.

E. F. & W. S. Ikard.—We purchased 30 bulls in Iowa and brought them into this (Archer) county. One of them died of acclimatization fever.

ARANSAS COUNTY.

Mr. T. B. McCampbell, Rockford.—In the fall of 1878 I shipped from Missouri one car-load of Durham cattle, about 24 head. Lost by acclimation 4 head. Two years ago last fall I brought from Lafayette, Ind., three car-loads (72 head) of Hereford cattle, 40 of which I kept on my own ranch. I lost 2 by acclimation fever, and 2 of bruises received on the journey out. Our cattle are not affected by Eastern or Northern importations so far as my experience leads.

Mr. Thomas M. Coleman, Rockport.—I do not reside in any of the counties mentioned in your circular, "Important to Texas cattlemen," but as you have sent me one I suppose you want information from this section. In reply, I have to say that a greater or less number of cattle have been imported to this section every year since 1874 from north of the southern line of Kansas, mostly from Kentucky, and that about 25 per cent. have died of acclimating fever.

I know of hundreds of instances in which cattle have been brought to this section from Eastern Texas and Louisiana, resulting in no disease to the imported or native cattle.

In addition to your interrogatories I will add that I have known cattle bred and born here, isolated from the range and large pastures, that, when sent out to large pastures, were affected as imported cattle, and as large a per cent. die. Otherwise contagious disease is unknown among our native range cattle.

BANDERA COUNTY.

Messrs. H. H. Carmichael & Co., Bandera.—Messrs. James B. McElroy, of Washington, Washington County, Pennsylvania, Andrew Mansfield and James D. Davenport, of this (Bandera) county, purchased 5 head of fine Durham cattle (2 cows and 3 bulls) in the month of August, 1882, in Washington County, Pennsylvania, and brought them to this place. They were turned out upon the range with our native cattle. All have lived and done well; the cows have brought calves every year since their arrival here; the bulls have served about the same number of cows as are usually served by our Texas bulls.

There are other stock-raisers residing in this county who have fine cattle that were brought from north of Kansas—Judge E. M. Ross and Albert Maverick. They did not

bring them from the North; they were purchased by them after having been brought through to San Antonio. All of the aforementioned cattle have done well on the range, and have had no symptoms of fever or disease of any kind whatsoever.

BEXAR COUNTY.

Mr. Henry Terrell, San Antonio.—Referring to your circular of April 18, which appears in the Associated Press dispatches of day before yesterday, I beg respectfully to submit for your information the result of my personal experience of five years of importation and dealing in cattle in Texas.

I have purchased yearly in Ohio and Michigan, blooded cattle, registered herd-book stock, and had the same shipped to my ranch near this city, and have given especial attention to the so-called "Texas" cattle fever.

In shipping my fine stock I have had stalls made in the car, had a careful man in charge, provided barrels of water and an abundance of feed to last through the journey. The stock has not been allowed to be taken from the cars from place of shipment until their arrival in this city. On their arrival here they have been as carefully attended to as possible, no labor or expense being spared to save them. With all this care I have been able to reduce the loss to less than any other person in the business of whose experience I know. My loss has averaged about 20 per cent.

All stock imported have an acclimating fever, horses as well as cattle, but the percentage of loss in shipping horses from the North is only about 5 per cent.

Post mortems made on the dead animals (cattle) of my importation show great diversity in the character of the disease. With some the manifold is thoroughly impacted with nearly dry, undigested food. Others show all the indications of death by pneumonia, with a slight adherence of the lungs to the pleura. With others the only evidence of disease is in the spleen and kidneys. One animal, after apparently recovering from the disease, died of gangrene—dry rot, as it were—retaining its appetite after its ears had fallen off, and when its feet were almost ready to fall off. One, where the *post mortem* showed both lungs and spleen affected, seemed to have lost all its blood—arteries and veins free of blood and less than half a pint of coagulated blood in the heart.

These animals were kept in the same stable and sheds with native stock and with animals saved from previous importations, drank at the same watering place, and took their exercise in the same lot. No native or previously acclimated animal has ever contracted disease from such contact with the affected.

I have no personal interest in the driving of native Texas cattle to Northern markets, but I beg respectfully to say that your list of counties given should have included, in my opinion, Zavala, Frio, Medina, Atascosa, Karnes, Wilson, Bexar, Kendall, Blanco, Burnet, Travis, Hays, Comal, Guadalupe, Gonzales, De Witt, Lavaca, Fayette, Caldwell, and Bastrop. The occasion of all the trouble, in my opinion, arises from shipping cattle raised on the lowlands of the coast, having very soft hoofs, to such points as Wichita Falls, and then starting them on a dry, hard trail over flint, gravel, and limestone rocks. Such animals become feverish in their feet and legs, and their movement over the trail leaves the germs or poison of a fever on the grass from which the Northern herds are poisoned. I do not believe that our acclimating fever arises from the same cause.

Cattle raised on the dry, hard soil and limestone ridges in the additional counties named should not be quarantined against. This stock is as sound and healthy here and can be driven North in as good condition, as any other cattle can be. They should not be classified with the stock raised on the low marsh lands near the coast. And even those, if driven slowly from their breeding-ground, instead of shipping to Red River by rail, can be taken to the Northern ranges without danger of communicating disease, as the long drive before crossing Red River would tend to put them on a healthier footing.

Messrs. J. O. & T. Dewees, San Antonio.—Our ranch is situated in Wilson, Karnes, and Atascosa Counties. We purchased 3 bulls in the year 1876; shipped them from Kentucky and turned them in with our Texas cattle. None of them died from fever; they lived and did well for several years.

We have handled a great many cattle from different parts of Texas and other States. We have brought cattle from Louisiana, Mississippi, Mexico, and from the coast of Texas to the eastern line, and from several counties northwest, and mixed them with our cattle on our ranch, and have never known of any disease to trouble them. We have never had such a disease as Texas or splenic fever. We have never lost any cattle except from black-leg or starvation. Our opinion is that the Texas fever is unknown in our native Texas cattle, and we do not believe they are capable of imparting a disease they do not have.

Mr. H. E. Barnard, San Antonio.—I am not well acquainted with all or any considerable portion of the counties named in your circular. I am well acquainted, however, with all Southwest Texas, including with many others, Bandera, Bexar, Frio,

La Salle, Dimmit, Maverick, Zavala, Medina, Uvalde, Kinney, Kerr, Kimble, Llano, Mason, Menard, Crochet, Pecos, Presidio, Tom Green, Concho, Blanco, Hays, and Comal. I have known several parties who have purchased thoroughbred bulls in Kansas, Illinois, Missouri, Kentucky, and Iowa, and shipped them into these counties with varied experience. Sometimes nearly all have died, sometimes none; generally there has been a small loss. The loss in former years has been much larger than of later years. When a loss is sustained now the general opinion is that it is the result of bad management very largely. Our own experience has been that of success; and my own opinion is that with proper care shipments of this kind may be made into any one of the counties I have named with reasonable security.

I have known but three instances in as many years of my own knowledge of the shipment of cattle from eastern counties of Texas into the counties I have named, although no doubt many more have been made. From those within my immediate knowledge no harm was done to native cattle, and great benefit was apparent to the Eastern cattle.

We drove 4,000 from Northern Texas (the extreme northern portion of Texas) to our ranch in Uvalde County, and neither those driven there nor the natives were in anywise injuriously affected.

This section of country which I have named has an altitude of from 700 to 2,000 feet above the level of the sea, and is by me considered the healthiest portion of the United States for both man and beast.

There has not, to my knowledge, been any disease among the cattle in this section during my acquaintance with it, which has extended over about four years. I formerly resided at Saint Joseph, Mo.

Many cattle have been purchased from this section this year for Colorado, and those buyers have nearly all told me that there is no danger from cattle driven over the trail from this section.

There seems to be an almost universal belief that there would be danger from cattle which had been shipped.

I am of the opinion that the counties I have named produce entirely healthy cattle, and quarantine against them is unjust and unnecessary.

Dr. George B. Johnston, San Antonio.—Our secretary has handed me one of your circulars.

"Have you purchased any bulls or other cattle?"

Yes; 16 head of bulls and heifers of T. E. Miller, of Illinois. They were Herefords, and arrived here February 28, 1885. They were shipped in box-cars, and were not unloaded on the way. They began to sicken April 20. Five died from fardlebound or congestion of the manifold. All were sick, some very low. Eleven are now well and quite fat. They were taken to my home farm, 8 miles out from San Antonio.

In answer to your second question I would say that Mark Pruit, of Uvalde County, Texas, drove 400 head of stock cattle from near Houston to his ranch in Uvalde two years ago. I inspected them last spring (to learn how such cattle do here) and found they had no fever, and had given no disease to the native stock.

Cattle grow larger and improve greatly by the change from Eastern to Western Texas. The above stock did so most decidedly. His ranch stock and mine intermingle freely.

BRAZOS COUNTY.

H. B. Stoddard, Bryan.—I have driven and shipped 3,000 to 4,000 head of cattle each year, for the past eight years, from this county to Caldwell, Kans., and Fort Dodge. No complaint ever reached me as to the cattle being diseased, or communicating disease to other cattle.

BURNET COUNTY.

A. R. Johnson, Burnet.—Noticing your published address to the citizens of many counties in Texas, I take the liberty of answering for Burnet County, although it is not included in your request. We have an elevation of about 1,500 feet above sea-level, with a broken and mountainous surface, and numerous streams of pure water. I am confident that it is as healthful for man and beast as any other point in the United States.

In answer to your inquiries I will say that I have a number of Durham cattle on my ranch, some of them thoroughbred registered stock, and none of them have ever shown any signs of disease. I have driven cattle North myself, and have conversed with over twenty-five responsible persons who have driven herds from this county North, and not one of them have ever known of any disease emanating from their cattle. And there never has been an instance where complaint has been made against our cattle.

CLAY COUNTY.

Mr. W. S. Ikard, Henrietta.—I would say that I have been buying cattle from Iowa, Illinois, and Missouri for several years. About eight years ago I bought 10 Hereford

bulls from Mr. Miller, Beecher, in Illinois; 7 died, but I think this was caused by driving through. It might have been the result of fever. In 1874 I brought 10 Durhams from Kentucky; lost none; in 1883 I brought 2 Hereford bulls from Missouri and 9 Durhams, and lost none; in 1884, I bought 26 Hereford bulls from Low Hastings, of Iowa, and 2 half Highland Scotch, none of which died during this winter. I don't believe there is any danger here.

COLEMAN COUNTY.

Mr. R. H. Overall, Coleman.—Referring to your circular of 18th of April, I have to say that in January, 1884, I bought of agent of Messrs. A. A. Crane & Co., Henry County, Illinois, 25 cross-bred Hereford and Durham bulls. They were immediately transported to my ranch in this county; they arrived about the 20th of the month; were turned into feed-pens with native bulls and other cattle, fed on milled hay and sorghum (sugar-cane) until the 1st of April, when they were turned loose in pasture of 25,000 acres, with nearly 3,000 head of cattle. Up to the time of turning them loose I saw them two or three times each day. I am confident I never saw a healthier or more thrifty bunch of cattle. Several months after this my hands reported two of them dead. On inspecting them one was found to have been gored by a bull; the other was so decomposed that I could not make a critical examination of him. These are all the losses I met with during the season. If any of these cattle were affected with Texas or splenic fever they all recovered, as we found none other than above described dead, and saw none sick.

I have purchased several hundred head of cattle in Arkansas, on parallel with Little Rock, and transported them to my ranch for breeding cattle, and have never known a case of Texas fever among them.

Mr. S. O. Cotton, Coleman.—As a cattleman of Coleman County, Texas, I ask leave to respond to your circular of 19th ultimo:

(1) I have not brought any bulls or other cattle from north of south line of Kansas, but several cattlemen of this county have bought such Northern bulls, the number I don't know. I have repeatedly made inquiries of the purchasers of such bulls as to the effect of the climate upon them, and I have never heard of one dying from acclimatization fever.

(2) Yes; I brought over 700 head of cattle from near the Gulf coast of Southeast Texas to this county in June, 1882. These were pastured along with the native cattle here, and not one of the latter ever died as the result of this contact, so far as I know, and no disease of any kind occurred to any of the cattle.

Many thousands of cattle are driven through this county annually from Southern and Southwestern Texas, and I have never heard of any disease resulting therefrom to the cattle of this county.

I am authorized by my neighbor, Mr. Andrew Young, an extensive cattle-owner of many years' experience in this county, to make the foregoing responses to your circular for him also.

We do not believe that cattle from this section have ever caused disease to Northern cattle, and we consider the Kansas quarantine a great and unnecessary hardship upon us. We trust you will be able to grant us relief.

COLLINGSWORTH COUNTY.

Mr. J. John Drew, North Elm Creek.—I have during the last nine years been engaged in the business of cattle ranching on the open prairie and in inclosed pastures in Southwestern Kansas, the Indian Territory (that portion just east of the one hundredth meridian and north of the thirty-sixth parallel), and that portion of Texas as indicated by the heading of this letter, which lies just west of the one hundredth meridian, with the thirty-sixth parallel running right through the center of one pasture. This experience, and it is one that has been dearly purchased, has proven to me that there is danger from the Spanish fever with cattle coming from that portion of our State, say south of the thirty-third parallel. Under no circumstances would I permit any cattle from a region south of the above line to get near enough, or into, my pasture, so that there would be a liability of any of my cattle grazing or watering where they had been, until at least after a frost.

We buy every year some Southern cattle, but we always hold them out, under close herd, until after first frost.

COOKE COUNTY.

Mr. J. G. Witherspoon, Gainesville.—In answer to the first question asked by you in your communication through the papers, I will say that we bought and put on our ranch in Hardeman County 73 Hereford and Shorthorn bulls this spring. We were encouraged to do this from the fact that our neighboring ranchmen, Forsyth Cattle Company, have been buying bulls from the same parties we bought from in the State

of Illinois for two or three years, and they have lost very few, if any, from Texas or acclimatization fever. There have been no cattle turned in our range from Southern or Southwestern Texas, so we cannot answer your second question, but will say that we lost cattle in 1883 from driving on the trail behind Southern cattle, and from contact with them, with the disease known as Texas fever. During last season our neighbors in Cottle County lost cattle in the same way, and for this reason we would be afraid to turn Southern or extreme Southwestern cattle among ours on the range. However, we believe that no cattle raised or held one year north of the Texas Pacific or west of the Houston and Texas Central Railroad are liable to give the disease known as Texas fever to our cattle (in Pan-handle), or to cattle in the State of Kansas, or in any of the Northwestern Territories.

Mr. J. M. Lindsey, Gainesville.—On three occasions I have shipped blooded bulls and heifers from Missouri and Illinois to this county (Cooke) and lost none of them. In the fall of 1882 I brought in from Tennessee 40 head of Shorthorns. I lost 6 of these in the summer of 1883. In the fall of 1883 I brought in 30 head from the same place and lost 8 of them in the summer of 1884. I have known of a great many cattle that were driven and shipped from eastern counties in Texas to Cooke and surrounding counties, or into the Indian Territory. I have known native cattle in these counties affected by reason of these Eastern Texas cattle being grazed and ranged with them.

Mr. S. Witherspoon, Gainesville.—We ranch in Hardeman County. In answer to your first question, I will say that we bought 75 Hereford bulls from Mr. Gregory, of the firm of Gregory, Cooley & Co., of Chicago, live-stock commission firm. The bulls were bred by Mr. G. on his farm near Chicago; were shipped to this county (Cooke) in December, and carried from here to the ranch in April last. None of them have died so far. Our neighbors have been buying blooded bulls from the Eastern States, principally from Illinois, Missouri, Kentucky, and Tennessee, and have had good luck with them. However, I wish to say that I do not believe that acclimatization fever has anything to do with it, or is in any way connected with Texas or splenic fever. Any cattle transferred from one county to another, and more particularly from a northern to a southern county, are liable to die with acclimatization fever, while no cattle were ever known to die of Texas or splenic fever unless they have come in contact with Southern or coast cattle, or have been driven across or on the trail with them. We have never known cattle from our country (Northwest Texas) to give Texas fever. Have never had Southern cattle thrown with ours on the range, but have had cattle to die from contact with Southern herds on the trail. We think the Texas Pacific Railroad a safe line from which cattle can be carried North without danger of imparting fever.

Mr. J. R. Stevens, Gainesville.—No danger of cattle driven from north of Texas Pacific Railroad, and west of Missouri, Kansas and Texas Railroad giving Northern cattle Texas fever.

DONLEY COUNTY.

Mr. James H. Parks, Clarendon.—In reply to your circular letter, I will state that this county is in the Kansas quarantine grounds, which extends in this vicinity to an altitude of about 2,000 feet or higher. Almost all the cattle in this quarantine ground, *i. e.*, bounded on the east by the one hundredth meridian and south by latitude 34, are just like Kansas cattle, subject to the contagion of splenic or Texas fever, and many die from crossing and feeding on the trail used by coast and Middle Texas cattle, just as Kansas cattle do.

I have talked with Mr. Charles Goodnight, one of the best posted cattlemen of the Pan-handle of Texas, and he thinks the cattle native of Andrew, Baylor, Callahan, Cottle, Fisher, Greer, Hardeman, Haskell, Howard, Jones, Kent, King, Knox, Martin, Mitchell, Nolan, Scurry, Shackelford, Stonewall, Throckmorton, Taylor, and Wilbarger will not transmit fever to the cattle in this locality, which is practically the same as Kansas. Mr. Goodnight's herd is Durham and graded Durham. He will not admit cattle to mix with his herd without a thirty days' quarantine of all cattle from a lower altitude than about 1,000 feet above sea-level.

Mr. Goodnight further states that, from practical experience on the trail with cattle that were known to transmit the fever, there is no danger to Colorado or Western Kansas cattle if the coast or Middle Texas cattle are taken on foot through a high altitude, say of 2,000 feet above sea-level, or, in other words, the high altitude of the Panhandle of Texas will prevent the transmission of the fever during the time it takes to drive about 250 miles.

ERATH COUNTY.

Mr. John A. Frey, Stephenville.—In answer to your communication of April 25, I will say that I have brought and known of being brought to this county 62 head of Shorthorn cattle from north of the line you speak of in your communication. In the year 1867 the Bruington Bros. brought 24 head of cattle from Northwestern Illinois, 17 heifers,

and 7 bulls, and in the year 1883 J. M. Bruington, of this county, brought 34 head from the same State, 10 bulls and 24 heifers, and in 1884 G. W. Gentry and myself bought 4 head that were shipped from Kentucky. Out of the lot brought here in 1867 by Bruington Bros. 4 died from acclimatization fever. I suppose out of the lot brought by J. M. Bruington (34) three died, not of fever, but I think from black-leg. Out of the 62 head brought here only 4 head have died of the fever.

In answer to the second question, there have been a great many cattle brought to this county from Eastern Texas in all seasons of the year, and such a thing as the cattle from that county imparting disease to our cattle here was never heard of, so far as my knowledge extends.

I forgot to mention, in answer to your first question, that the cattle of J. M. Bruington, brought here from the North, have been running in the same pasture with native cattle ever since they have been here, and both the native and Northern cattle are perfectly healthy.

Mr. J. H. Hyman, Stephenville.—In answer to your first question, I will say that I know of about 100 Durham cattle—mixed bulls and heifers—that were introduced into Erath County, and that only a very few have died, not over 7 per cent. It is very problematical whether any died except from careless handling and want of proper feed and shelter.

I know of no Eastern Texas cattle being introduced into this county, and have heard of no trouble from this source.

EL PASO COUNTY.

Mr. Louis W. Evans, Camp Rice.—In answer to your first question, I have to say that I, together with my immediate neighbors, imported from Kansas the 1st of April last 60 head of Hereford and Shorthorn bulls, and none of them have died so far. Also my friend, Mr. G. T. Newman, whose ranch is located in the eastern part of this county, imported from Missouri, some two years ago, a lot of Durham bulls, and lost none.

In answer to the second question, I would say that in May, 1884, I shipped 470 head of cattle from Gonzales County to this place, and drove them from here to my ranch, 25 miles below here, on the Rio Grande, and during the month of July some 50 head or more of the native cattle (with which those shipped had come in contact) died. My neighbors pronounced it Spanish fever.

Mr. J. C. Beatly, El Paso.—Your circular at hand. The counties named therein are exempt from what is known as Texas fever; but cases have come under my observation where cattle have been driven from the extreme southern part of the State, and have transmitted the disease to cattle located on the ranges. So far as my observation has gone Texas fever is confined to cattle in the extreme southern part of the State. Bulls brought from north of the south line of Kansas require to be brought in when young, and if properly taken care of are all right. They are safer in this part of the State than if taken farther east where the elevation is not great.

FRIO COUNTY.

Mr. James Speed, Moore Station.—I will state that I have driven cattle to Kansas since 1870, and by the commingling of the cattle from Southwest Texas with other animals they have never taken any diseases from them. I also notice that the county to which I belong is not included in your list.

My brother, S. G. Speed, has shipped cattle from Lebanon, Ky., and has the same cattle in Frio County. He lost some on the first shipment, but none on the last shipment. I cannot see how this is so in regard to Texas cattle breeding disease when no such thing has ever been discovered in Texas cattle. A great many people in my county have become educated to citizenship, and still more of them believe that the General Government should control commerce between the States that belong to the General Government.

GRAYSON COUNTY.

Mr. Joseph Clymer, Sherman.—I have to say that I purchased, in the fall of 1883, 18 head of thoroughbred Shorthorn cattle in Kentucky; transported the same to this county by steamboat and railroad. In the lot I had 13 heifers and 5 bulls; sold 4 bulls and 1 heifer. I still own 12 heifers and 1 bull. All the heifers have been bred and now have calves. None ever showed any symptoms of disease whatever. Our prairie grass has given them a rapid growth.

GONZALES COUNTY.

Mr. J. E. Wilson, Waelder.—In answer to the question asked I would respectfully say that last year we shipped to Presidio County (which joins Tom Green and Pecos

Counties) cattle from Waelder and from Bee, Live Oak, and Goliad Counties in the spring, summer, and fall of last year (1884), and we have had no disease of any kind whatever up to the present time. The cattle are doing finely and have always been healthy. I also shipped from the counties of Live Oak, Nueces, Bee, and Gonzales to Wichita County some 3,000 head during the months of April, July, August, and October, 1884. I never had one sick nor did they ever affect any of the native cattle there. I have some bulls brought from Ohio to Wichita which have never been sick. One of my neighbors in Presidio County shipped from Ohio some 30 Hereford bulls, which were with our native cattle and have never been sick.

HARRIS COUNTY.

Mr. C. R. Cox, Houston.—In reply to the inclosed request for information, whilst my cattle and the cattle belonging to the members of the Live Stock Association of Southeast Texas are all outside of the counties named in your circular, yet believing information of the fullest character is what you desire, I will give you such information as I can personally vouch for. I have 3 thoroughbred bulls (natives), all well and thrifty, with scarcely any care of feed except what they get on the range.

Mr. L. Winston and Mr. W. I. McNeel, who reside in Matagorda County, each, a number of years ago, bought a thoroughbred Durham bull that did exceedingly well, and lived many years without special care. These bulls were imported from Kansas, while Mr. J. I. Sargent bought at the same time and from the same place several Durhams, all of which died in a few years; all of these parties are neighbors. About three years ago a neighbor of mine moved 1,650 head of cattle from Brazoria County to Crosby County. They have done exceedingly well; have had no disease, nor have they imparted disease of any character to other cattle. Mr. John Duncan bought in Brazoria and Matagorda Counties some 1,200 cattle which he located in Crosby County. They have been very thrifty and healthy ever since, and have not infected other cattle. The cattle of Southern and Southeast Texas have never, as yet, been subject to disease, so far as my knowledge and experience go, and I have been engaged in the businesss as a specialty for twenty-five years.

Mr. C. C. Gibbs, Houston.—As a representative of southwestern railroad interests I take this occasion to express to you our thanks for the consideration which you have shown to the cattle interests of Texas in the issuance of your recent circular asking questions, which, if properly answered, will enable you to determine officially the non-infected portions of Texas. This is a matter of national importance, for the reason that the tendency of the cattle business is to use our Southern ranges for nursery grounds and the Northern ranges for maturing grounds. It is true that the line as drawn practically proscribes the larger portion of business tributary to our road, but I consider this inexorable, and while for the present it may militate against our interests, in the long run, I hope and think, it may redound to our benefit, believing that in the event of our moving coast cattle to Northern climates, should there be an outbreak of disease, it would simply ostracize business from certain sections for a long time to come. I confidently expect that the railroads having connecting lines from Texas to the Northern ranges will move considerable young cattle every year from Texas. While the movement this year will be necessarily light, owing to the unnecessary restrictions that have been placed by the Northern quarantine officials, we will identify ourselves with the movement, and conduct it in such a satisfactory manner as to lead to its continuance. We realize the fact that this movement can only be made a success by throwing such restrictions around it as will protect Northern native cattle from all possible danger of fever, and we therefore greatly appreciate the position you have taken in the premises. The interests of the railroads are identical with the interests of the cattlemen. We receive in freight on an average about one-fifth of the price of the cattle that are marketed, and therefore the consideration which you have shown for our interests is a recognition we deeply appreciate. It shall be our aim to extend to you our most earnest support in every way possible for the promotion of your interest as well as that of the general public.

JACK COUNTY.

Mr. J. W. Colston, Gertrudes.—My attention has been called to a circular issued by you, asking information regarding the so-called Texas fever within the borders of certain counties enumerated. As secretary of the Young Company Cattle Raisers' Association, I will answer for the counties of Young, Jack, and the southern part of Archer and Clay.

First. There have been numerous importations of blooded stock, including Durhams, Herefords, Polled-Angus, Holstein, and Jerseys to the counties specified by me, and while some showed slight symptoms of acclimatization fever the majority went through without any visible alteration, and, so far as my information reaches, none have died.

Second. There has been no disease, within the bounds specified by me, caused by the introduction of cattle from the western counties of Texas. But there was a very peculiar and fatal disease prevailing last fall and winter, and by well-posted parties it was attributed to the introduction of cattle from Louisiana, Florida, and Mississippi.

Lastly. I think that a careful and unbiased investigation of the so-called Texas or splenic fever will establish the fact that it is confined principally to the Gulf coast and adjoining counties, and is as prevalent in the other Gulf States as in Texas; and furthermore, that the northern and northwestern part of Texas is as free from the disease as any of the Northern States or Territories.

KINNEY COUNTY.

Messrs. Woodhull Brothers, Spofford.—In reply to your inquiries, we would most respectfully state that we have made some direct purchases and shipments of bulls, heifers, stallions, jacks, horses, and rams from north of the south line of Kansas, and brought them direct here to this ranch for our own purposes and for sale.

Our first purchase from the country near Kansas City was in October, 1882, and consisted of 3 fine stallions, 3 jacks, and 4 bulls. All of this shipment lived here and did remarkably well. The bulls are still alive, except one that got killed on the railroad last summer. I saw one of them on the range to-day; he is fat and fine as any bull I ever saw, that ran out loose, in any of Northwestern States.

Our second shipment from the country near about Kansas City was in June, 1883, consisting of 12 stallions and 2 jacks, all of which have done well and given entire satisfaction.

Our third shipment from about the same section was in November, 1883, consisting of 51 rams, 18 bulls, and 6 heifers. This stock all did very well, and only one of the heifers died, and that was not until a very hot day the following summer; she was very fat and died suddenly before we could give her proper care and attention.

Our fourth and last shipment from about the same locality was in March, 1884, consisting of 10 bulls, 3 stallions, and 2 geldings. We never have lost a single horse or jack in any shipment. Of the above 10 bulls some of them became a little sick upon the approach of warm weather, probably produced by the sudden change from the cold weather in Missouri to the warm weather here. However, they all recovered except 2 that died, thus showing that the fall season is the best time to bring cattle from the North here. We have also made frequent purchases of fine sheep from Vermont and other States, and sustained very light losses in acclimating same.

We have purchased cattle from the central portion of Texas and had them delivered here in the spring and summer months. Far from becoming in any manner sick, they all began to improve immediately after, and within twelve months from the time they arrived here they looked so much better, larger, and like an entirely different lot.

We also have a herd of cattle brought here from Mexico. Not a single one of them has died from fever or any other sickness. We have very frequently seen cattle from Eastern ond Southeastern Texas, also from Louisiana and Alabama, brought to this section of the country, and never saw or heard of a single instance of fever or anything of the kind, but on the contrary, all the cattle seemed to take a fresh start immediately after arrival here, grow out, and improve wonderfully; even aged cattle seem to change, spread out, and grow larger.

Some men have made a very successful business by buying cattle cheap in Eastern Texas and Louisiana, bringing them out here to Western Texas for a year or two to fatten and grow out, then selling them again at greatly advanced prices. Such a thing as fever or sickness among them, or any other native cattle, is entirely unknown and unheard of here.

The prohibition, a barrier placed upon Texas cattle this year, has injured our State millions of dollars.

Last year we sold our yearling steers at $13 here at the ranch; now we are only offered $8 for the best ones. Many people who only have common stock are compelled to sell them for $6 each, in order to procure money to buy the necessaries of life.

KARNES COUNTY.

Mr. W. G. Butler, Helena.—In reply to yours of April 25, I would say that I have purchased several cattle that came from north of the south line of Kansas, and I have lost none by acclimatization fever. I don't know of any disease occurring amongst the cattle of the northern counties by Southern Texas cattle being driven and grazed on the same range in any month of the year.

LAMPASAS COUNTY.

Mr. W. I. McCausland, Lampasas.—We bought up last April, and turned over to Captain C. C. Howes, of the firm of Miles, Strevell & Howes, of Miles City, Montana Territory, about 2,000 head of young cattle of this county. He carried them through on the trail to their ranch in Montana Territory, and turned them loose with their native cattle, and all have done well—so they report.

Also, last May, I started from here with 2,500 head of cattle, cows, yearlings and two-years old, on rail to Valentine, Nebr., at which point (Valentine) I threw into the Texas herd 400 head of cattle, raised just north of and shipped from Memphis, Tenn., many of which were Durham cattle. We drove the whole herd of 2,900 head through from Valentine, Nebr., to Miles City, Mont., a drive of 500 miles, in May, June, and July, being sixty-five days on the trail. On the 28th of July I turned them over to Henry Tesler and to Frank Westervelt, of Miles City. There were no sick cattle from any cause from beginning to end. Tesler writes me they have done exceedingly well.

Also, our herds got mixed somewhat, in Nebraska, with Missouri herds, and were together during the sixty-five days' drive. The Missouri cattle were from north of the Missouri River. No sickness resulted from the mingling of the herds, as all my men will testify. I lost some cattle on the cars, but it was from trampling, &c.

Messrs. H. T. Hill, J. P. Higgins, W. R. Williamson, and *W. I. McCausland, Lampasas.*—In the fall of 1874 and 1875, Mr. Thomas Sparks, of Lampasas, brought to this county 44 head of Durham cattle from Colorado, and distributed them as follows: To John Townsen, Wat. Smith, Tifford Bean, Henry Hill, and to others, and many of the issue of these cattle are scattered through this and adjoining counties. Of these cattle a few were cows and the balance yearlings. These all lived except 9 head, which died a short time after reaching the State. Some were sick when they reached this county, and nearly all that died were grown cattle. They held their heads down, their ears drooped, had high fever, breathed rapidly, urine highly colored, and their bowels constipated. They seemed to want to keep their heads in the shade. Death followed in a week or ten days. They were shipped by rail, and were exposed to the sun, which was quite hot; the young stock did not suffer as much as the grown cattle. The sickness may have come from the great change of climate, the want of sufficient water, and the discomforts incident to rail transportation.

Mr. Henry Hill, of Lampasas, has been driving large herds of cattle from this and adjoining counties since 1871, and distributing them through Kansas, Colorado, and Wyoming Territory, turning them out with native and other cattle of these countries, and he has never known, during that time, any bad results to follow. Mr. Hill has sold to the following parties: Batey Bros., Denver, Colo.; Sanford Cattle Company, Plattville, Colo.; Van Buskirk, Catlin, Colo., and to others.

Mr. Thomas Sparks, above referred to, has large cattle interests in the northwest, and has driven through, on the trail, with like results. Mr. J. Pink. Higgins and John Townsen, both of Lampasas, say the same thing, to wit: "That the cattle carried northwest by them from this county have never, to their knowledge, carried with them any infectious disease."

Mr. Lee A. Masty, then of Lampasas, but now of Kansas City, Mo., in 1880, brought 30 or 40 head of young Durham cattle to this county from Dallas, Tex. These cattle had all been recently shipped from Kentucky. They nearly all lived and did well. Indeed, we do not know of any loss.

Mr. William Williamson, of the firm of Brown & Williamson, of Lampasas, an extensive stockman, says he has known cattle to be brought from the western, southern, eastern, and northern counties of the State to this county, and that they did well, showing no evidence of receiving or communicating any sickness. And also, that cattle, especially those from the east and south, on account of better feed, were more thriving and became fatter the farther north they went.

MATAGORDA COUNTY.

Mr. A. H. Pierce, Rancho Grande.—I have been as familiar and probably as well acquainted over Texas as any man in it, having imported as many as 80 Northern bulls from Kentucky and Missouri at a time, of which I lost from 33 to 50 per cent. of every lot brought in, and while I live in the coast region of Matagorda and Wharton Counties, will state that Northern bulls die oftener with us than in any of the counties named in your circular, and our cattle driven from Eastern Texas to the counties named do not contract disease at all, and cattle from those counties do not die when brought to us. Every man has his own theory as regards Texas fever. I know there is such a disease, but not to such extent as reported; the cry is raised for self-interest, and it will regulate itself in the next eighteen months. Texas fever is caused beyond a doubt from handling stock badly—late in the season, when the weather is too

hot and water scarce. If they do not have it this season they need not fear it again for the next five years, as the cattle going North this season are starting later, by 60 days, than usual.

MITCHELL COUNTY.

Mr. A. P. Bush, Colorado.—I have not bought any bulls from north of the south line of Kansas, but many have been brought to this section of the country during this season. McWilliams & King, out of 32 bought in February, have lost one (located in the southern part of the county). M. Z. Smisson, in Tom Green County, lost 3 out of 38, and others have had more or less losses, but as far as my observation and investigation has gone, bulls brought here at a season of the spring when they can get fresh and tender grass, have shown lighter losses than when brought during the winter. The bulls that have died have, as a rule, not come in contact with native cattle. I do not know of any cattle brought from Eastern Texas and turned loose in the counties named in your circular.

Mr. H. M. Catlett, Colorado.—In reply to yours of the 25th instant I will say that I have no personal experience in handling Eastern or Southern Texas cattle in the counties north and south of Brown County. I purchased a few three-fourths bred Herefords in Ohio this spring, and have had them on the ranch in Tom Green County for two months. As yet none of them has shown any symptoms of sickness or acclimatization fever.

I do not know of a case where Southern or Eastern Texas cattle have given any disease by running on the same range with our native cattle.

Mr. M. L. Adams, Colorado.—In reply to your circular of April 25, I will say that there has been quite a number of bulls brought to the counties named from north of south line of Kansas, and some have died, but in my opinion it was for want of feed more than anything else. Cattle driven from the eastern counties into the counties named communicate no disease to natives, but graze together and do well. My ranch is located in Borden County.

Mr. A. B. Robertson, Colorado.—In reply to yours under date of 25th ultimo I have to say that I have not only bought Durhams, Herefords, and Polled Angus bulls, and had them shipped from even farther north than Kansas, but have been very familiar with others' transactions, and can state without fear of contradiction that with the exception of a very few instances, the cattle coming from the North have done exceedingly well; in fact until quite recently there have been no losses in this part of the country of cattle shipped from the Northern States, and it is safe to suppose that they did not die of Texas fever.

In reply to your second question, I will simply state that it has been known as an established fact that the cattle driven from Southern Texas have caused no disease whatever amongst either cattle in this section or the cattle driven from the South.

NUECES COUNTY.

Mr. H. Seligson, Galveston Rancho.—Referring to your circular addressed to cattle owners in Texas, I beg to state that I have been raising cattle in Texas for thirty-five years; have resided here forty-six years. I know from my own knowledge that six years prior to 1861, when from 30,000 to 60,000 cattle were driven to Kansas each year, we heard nothing of Texas fever. So long as they were driven through we heard very little of it, but so soon as they were shipped by rail and crowded into cars in hot weather they became fevered and no doubt in some instances infected others. But a great deal of this hue and cry of Texas fever is founded on the fact that Kansas and the Territories are well stocked with our cattle and they do not wish competition from Texas any longer. They know this to be the great breeding grounds, averaging 90 per cent. of calves as against 60 per cent. with them. Our people in the Pan-handle in Texas, who now have their ranges fully stocked, have proclaimed a quarantine against Southwestern Texas cattle. They average about 70 per cent. of calves, so they, too, realize that they cannot compete as a breeding ground, and they, too, proclaim their independence of law, right, and justice.

I purchased 24 bull calves from Smiths & Powell, Syracuse, N. Y., last year, and lost 7 from acclimatization fever. They were twenty-one days on the cars and the weather was warm.

During forty-six years in Texas, I have never known of any disease resulting from cattle driven from any portion of Texas either from East or Southwest Texas, to the counties named in your circular.

PARKER COUNTY.

Mr. Samuel H. Milliken, Weatherford.—To your circular of April 25, in regard to cattle disease, I have to say that about February, 1884, I purchased and brought from

Pleasant Hill, Mo., 38 Hereford yearling bulls, and put them on a ranch on the Brazos River in Parker County. Within the first six months they were all sick, presumably with acclimatization fever, and 14 of them died; the remainder are doing well. J. J. Hittson brought the same number from the same place at the same time and put them in Palo Pinto County. He lost 18 or 20 from same apparent cause.

Eastern Texas cattle are brought into this section every year, and I do not know of any disease occurring among them or among native cattle.

Mr. James P. McFarland, Aledo.—In answer to your questions to the cattlemen of Texas, I would state that I shipped 24 head of Shorthorns (Durham cattle) to Parker County, Texas, from near the line of Kentucky and Tennessee, which is parallel to the south line of Kansas, in November, 1883. Out of that number 16 died of acclimatization fever, leaving 8 alive. All had the fever. The cattle were all fat and in good condition when they sickened and died. All when taken sick refused to eat, and appeared stupid and sluggish. A *post mortem* examination revealed the following facts, viz., lungs in a normal condition, liver highly engorged, and the gall bladder full to repletion, with dark inspissated bile, and presented the appearance as though it had been dipped in saffron. The mucous membranes of the first stomach normal. The second stomach, in every case, was filled with dry, hard food, that required force to pull it asunder. In fact it presented the appearance of an India rubber ball. The kidneys were injected and nodulated; no urine in the bladder. All had, more or less, diarrhea from the time of attack. None of my native cattle on the ranch were affected, though the Shorthorns mixed with them in the same pastures and ranges.

I have no answer to your second question, but I do not think disease is communicated to our cattle from those coming from the West.

PECOS COUNTY.

Mr. W. W. Simonds, Thurst.—In reply to your first question, I will say I know of one bunch of graded bulls coming into our county from Missouri, and about one-half of them died from disease called acclimation fever.

In answer to your second question, I know of no case where cattle have either been sick or have died from any fever of any kind.

REEVES COUNTY.

Mr. A. W. Hilliard, Pecos.—In reply to your circular of April 25, I have this to state: There are several ranches in this vicinity in which young thoroughbreds (Shorthorns) have been imported from Missouri during the last two years. Fifty were owned by J. B. Wilson & Co. Only 3 or 4 died out of this lot by acclimatization fever. Location on Pecos River near New Mexico line.

With an experience of twelve years I have but in one instance known cattle affected by those driven into any of the above-named counties, and that was during the summer of 1878, when a herd of Shorthorns from Colorado were put on the same range with Southern Texas cattle. This was in July of that year.

East Texas cattle have never infected my Shorthorns, and I have handled many in the last ten years.

SHACKELFORD COUNTY.

Mr. W. D. Reynolds, Albany.—I have known quite a number of cases where bulls from Northern States brought here have suffered from acclimation fever, and in cases where they have been turned out to get their own living and be their own doctor the loss has been heavy. When they are cared for and attended to until they pass through the change of fever (which occurs sometimes soon after arrival, and at others six or eight months afterwards) the loss is light, and the cattle seem no more subject to disease than those bred and raised here. S. M. Swenson & Son, of New York, who have a ranch in Jones County, shipped here from Iowa, I think, or some Western State, about 150 head, and I hardly think their losses exceeded 10 per cent. I have known of other cases about like theirs, when the stock has been well cared for. My experience and observation is that all stock from a northern latitude brought south are affected by the change, and even persons claim that they feel the difference. All cattle get sick first or last. Horses for use plainly show that they are not themselves the first year they are brought here. I don't know of a case where cattle were sick and properly cared for in time that it failed to cure them.

Our cattle are graded Hereford and Durham. Some of the males now on our ranch were brought here nine years ago from Illinois, some from Colorado and Kansas. We have several head of cows and bulls raised by T. L. Miller, of Beecher, Ill., which have been here now nine years. We lose quite a number every summer during the heated term, generally good grades, from what is called dry murrain, or Texas fever. The "maw" clogs with dry grasses, the bowels refuse to act, producing fever, from

which they die. If found in time and attended to we seldom fail to cure them. We live and ranch on the Forts Griffin and Dodge trail, but can't say whether the cattle which pass from all parts of the State cause the disease or not, but it seems to be the general idea that such is the cause, especially from cattle a good way south and east of here, which, owing to distance, pass during the latter part of June, July, and August. We are seldom troubled with it during the spring. I have lived here for thirteen or fourteen years, and before cattle from South and East were driven here and through here we were never troubled with any kind of disease. Cattle off the route, and which do not come in contact with Eastern and Southern cattle, seem to be unaffected. I believe cattle from north of here brought in and isolated would have to pass through an acclimation within twelve months. Generally the first three months is the time most of them are affected.

TARRANT COUNTY.

Mr. S. W. Lomax, Fort Worth.—Replying to your inquiry of the 25th ultimo, I beg to answer that this company ranches in the counties of Kent, Dickens, Garza, and Crosby. We have for two seasons past bought Shorthorn and Hereford grade bulls, which were dropped in Kansas, and driven to our ranch in April and May, aged yearlings and twos. We have lost but very few of them, and those that have died (not over 2 per cent.) have died from nothing of the nature of Texas fever. We bought in the first year 200, and afterwards 500, and cannot state that any died of acclimatization fever. The few that died seemed affected by ordinary causes.

I do know of deaths being caused to our cattle on the range from contact with Southern Texas cattle which had been driven through, and I also know of our cattle dying from what is called Texas fever from being exposed to the trail of cattle from Southern Texas. Our cattle so dying would be affected noticeably after about nine days from exposure; they would gaunt up, show signs of high fever, heads down, eyes glassy, and in some instances become very wild and inclined to fight.

On being cut open after death I have found the bowels dry and the intestines shriveled and hard, and the contents very hard and congested.

Your efforts to have a true fever line determined should meet the hearty co-operation of every Northwest cattle owner, since we suffer greatly under a quarantine designed to prevent what we could not communicate, and of which we are just as much afraid as any cattleman in Kansas or Colorado.

Mr. W. H. Somerville, Fort Worth.—Referring to your circular addressed to Texas cattlemen, we have pleasure in replying as follows:

In 1883, and again in 1884, this company (the Matador Land and Cattle Company) purchased in Kansas between 300 and 400 head each year of bulls—Durham and Hereford—from three-fourths grade to pure blood, pedigree stock. In both cases these were driven from Kansas through the Pan-handle during the month of May, and were turned out on the company's range (embracing portions of Motley, Cottle, Dickens, and Floyd Counties) between the 1st and 15th of June. We have naturally watched their progress carefully, and have never yet known one to be sick or diseased; indeed, to the best of our knowledge all, with the exception of three that were killed by accidents, are now alive and in good condition. We are repeating the same practice this year with 350 head, being satisfied of its safety.

We are unable to give any information on the subject of your second inquiry.

THROCKMORTON COUNTY.

Mr. B. F. Reynolds.—I drove 200 head of improved cattle from Colorado to this country. They commenced to die at the Canadian River, which is about the thirty-fifth parallel, and they continued to get sick and die for eighteen months after leaving Colorado. I lost about 50 or 60 head. I also lost some of the calves that were dropped in the country. Some of them had the bloody and others the dry murrain. When cut open the stomachs of some would be full of blood, while others would be dry and hard as a plug of tobacco. I have known of many others being shipped to this country, and they all, to the last motherless calf, have some disease, and a great many of them die. But the disease is not contagious, as it does not affect the natives of this country or the cattle from south of here. Neither do cattle from this country affect the cattle of Colorado, as I have seen herd after herd of Texas cattle turned loose among the fine Durhams of that country, and I never heard of such a thing as Texas fever or any other disease except poverty in the five years that I lived there (I left there in 1875). But that Southern cattle do not affect cattle along the south line of Kansas in that large grass country I am not prepared to say, but I drove Texas cattle through there one year, and I heard no complaint. My opinion is that at certain seasons of the year cattle will die more or less along in Southern Kansas and the northern part of the Indian Territory, as that seems to be the worst place for the disease. In regard to the disease that affects cattle brought from the North here, it

seems to me that that is a different disease altogether, as you may bring 100 head here and keep them all in separate places, and they will all get sick and not affect the native cattle of this country; so it seems what makes one sick does not make another sick, and they do not communicate it from one to another.

If you can do anything to help us get cattle from this country North you will be a benefactor, and I think no detriment will result to those of any other locality.

TOM GREEN COUNTY.

Mr. E. B. Bronson, president El Paso International Stock Growers' Association.—In reply to your questions I have to say:

(1) That fine cattle from north of the south line of Kansas have been brought by myself and others to the Pecos River, in Tom Green County, Texas, and to my knowledge none have died of acclimatization fever. In fact, our losses in introducing high-grade bulls on that range are practically nothing.

(2) That during the passage through our ranges on the Pecos River, in Tom Green County, last summer, of Southern and Eastern Texas trail herds, we suffered a loss by death of a considerable number of range cattle, the symptoms as nearly as we could determine being identical with those of the so-called Spanish fever. The number so lost, however, I am unable to state.

Mr. Philip C. Lee, San Angelo.—In answer to your first inquiry, I personally know of 50 head of high grade Hereford bulls brought here in the spring of 1883, and turned loose on the range. The loss was 40 per cent. Also 50 head of same grade and class turned loose on the range, December, 1884. So far there is no loss. But these lots were brought from Missouri. This spring has been cool, with plenty of rain, consequently favorable for acclimating.

I have known of several herds of Southern cattle brought here and turned loose on the range in summer; have never known or heard of the native cattle being affected by any disease from contact. Our cattle are free from diseases of all kinds as far as we know.

Mr. M. Z. Smissen, Colorado.—Being fully aware of the just feeling which prompted the issue of your circular of the 25th ultimo, and for which I most sincerely thank you in my own behalf as well as in that of my neighbors, I hasten to answer the questions propounded as accurately as possible.

(1) I have personally imported from Northwest Missouri, in all, 91 bulls within the last three years. The first lot which I brought out in 1882 consisted of 23 head, of which 16 head were Shorthorns and the others Herefords; they were grades. Of this lot 7 Shorthorns died in the winter. Do not know what they died of.

The next lot I brought out were 68 Herefords, shipped in the spring (March 1, 1885). Only 3 of these died; the balance all O. K., and doing well. The cattle were not kept up, but are running around with the other cattle in the pasture.

Mr. John McWilliams imported 30 Herefords from Southeast Missouri, and lost 1 from disease.

Mr. R. R. Wade, 18 miles from here, brought 18 bulls from Ohio, and lost 10 head. The feed gave out on him on account of railroad strike.

Mr. McMoy, of Sawyer, lost 21 out of 55 Durhams and Herefords mixed. The cattle, when he brought them, had been three months in the country, and it is supposed that if they had been fed they would have pulled through.

I bought 100 head of cows in Hill County and turned them loose here among 10,000 others, and experienced no disease. I know of 440 head of steers being brought up from the coast in 1880 and turned loose here without any bad effect. Do not know of any case in which Southern or Eastern cattle have made any havoc here among the native cattle of Tom Green. However, there have been but few Eastern cattle brought here.

Mr. M. B. Pulliam, San Angelo.—In response to yours of April 25, will say that in 1879 I shipped 35 Durham bulls from Kansas to this county, of which 7 died. The balance are doing well. The 7 died from causes unknown to me. I have known of cattle being driven from various southern and eastern counties, and placed on my range together with my native cattle, but never have known of any having died. I do not think they would convey any disease to native cattle.

Mr. Reuben H. Sherwood, San Angelo.—I have just read your letter to Texas cattlemen. I have been in the business of stock raising for over thirteen years. In reply to your questions I will state my own experience. In the month of October, of last year, I bought 5 thoroughbred bulls from a man in Dallas, which he had shipped from Kentucky in December, 1880. I shipped them to Abilene, Taylor County, and though considered acclimated cattle they took fever from standing in a shipping pen into which had been unloaded a few days before a lot of cattle from Southeast Texas. Three of them died, the other 2 I saved by turning into a pasture stocked with Concho River cattle. I don't consider it a safe investment to ship either cattle or horses to this county from the North, as some of almost every lot are sure to die. Horses are as

liable to death by acclimation as cattle. This county, and most of the high upland counties in West Texas, are as unlike Eastern and Southern Texas as is Kansas. We have a very high, dry country, and in winter it becomes quite cold. Zero is not an uncommon degree of cold. There have been cattle—bulls—shipped to this county from both Kansas and Missouri, and I believe they stand the climate better than others.

Mr. R. Rochefort Wade, San Angelo.—In answer to questions addressed to Texas stockmen with regard to importation of cattle, I beg to state I have purchased a carload of 20 Hereford bulls shipped from Ohio, out of which I have lost 60 per cent. Several parties have got bulls, both Hereford and Durham, from Kansas and Missouri. Those brought from these States have not been as liable to Texas or acclimatization fever as if brought from States farther north. I do not know the exact localities from which they came.

I know of several lots of cattle brought from the East to this county, and have had some myself pastured with the range cattle, and no disease has occurred.

TRAVIS COUNTY.

Mr. W. S. Carothers, for Dolores Land and Cattle Company, Austin.—In January, 1884, we purchased at a place 12 miles southwest of Indianola, Warren County, Iowa, 42 young bulls. Two were thoroughbred Herefords, and the balance were out of high grade Durham cows, by thoroughbred Hereford bulls. We had them shipped by rail. They were snowed up near Autumn, Iowa, and were without food or water for forty-eight hours and over. Several of them had their ears badly frozen. They arrived at at our ranch in Kinney County, Texas, on January 14, 1884, in bad condition from length of time in transit and want of proper care while *en route*. We know that two of them died from the effects of the shipment, they having been badly crippled. The other 4 (6 having died) in all probability, died from the effects of the exposure and bad treatment while on the trains. The 36 left are in good condition, doing well, and are now on the ranch.

In January, this year, we bought another lot (41 head) of the same class and from the same place as the lot above mentioned. They arrived at our ranch in Kinney County, Texas, on January 17, 1885, in fair condition. Two died shortly after their arrival there. The balance (39 head) are now on the ranch in excellent condition and doing well.

We also purchased another lot (Durhams, bulls and heifers) from Hume Bros., near Lexington, Ky., in December last year. They arrived at our ranch in Kinney County, Texas, about Christmas day. Eleven died soon after their arrival there. We then sent and got Dr. E. A. Carothers, of San Antonio, Tex., to go out to the ranch and make a medical examination into the cause of their death, and see what, if anything, could be done to save the remainder of the herd. After a more thorough examination and investigation of the matter, his conclusion was that they were dying from the effects of exposure, the weather having been for some time very cold and wet—wet winter northers—and there was no shelter on the ranch for the herd. Dr. Carothers recommended that we house the herd and feed them well for a time, which was immediately done. Since then we have only lost one, which died on January 26, 1885. The balance are all on the ranch in good condition and doing well.

In 1880 we moved 8,200 cattle from our ranch from Williamson and Milam counties (also some from Bee County), Texas, to our ranches in Dimmit, Zavala, and Kinney counties, Texas, where they have been ever since. This stock and increase numbers over 15,000 head, and there never has been any loss or sickness among them. The native cattle that were there in 1880, and with which our stock has intermingled continually, have never been sick or had any disease.

UVALDE COUNTY.

Mr. B. F. Buzard, Uvalde.—Thoroughbred and high grade, Shorthorns, and Hereford bulls have been brought from north of the south line of Kansas into this and adjoining counties for the past three years. In October, 1884, Searight and Carothers brought about 50 head from Iowa to their ranches in Zavala and Kinney counties, and the previous year about the same number with no loss from fever. Dr. Johnson brought several car-loads from Kentucky to his ranch on the Frio River in this county, and I have not heard of his having lost any. Mr. O'Neil brought 3 fine thoroughbred Shorthorn bulls from Kentucky four years ago, which are yet doing good service on his range. Many other cattlemen have brought in good stock with like result.

Thousands of cattle from Eastern Texas have been driven into this and adjoining counties during the spring and summer months, and allowed to pasture on the same range with cattle native to these counties without loss to either, all being alike very healthy.

During the months of June and July, 1882, I drove from North and East Texas, from the counties of Cooke, Denton, Collin, Hunt, Fannin, Lamar, Red River, Delta, Hop-

kins, and adjoining counties, putting them in pasture with cattle native to those counties. I also, at the same time, brought with those cattle about 150 grade Shorthorn bulls that had been bred in some of the above-named counties. Neither natives nor those driven in have ever had any disease.

Mr. A. Moore, Frio Ranch.—Referring to your printed circular of April 25, I beg to answer the questions contained therein, as follows:

(1) I will state that I have not imported any bulls or other cattle from outside this State. I use full-blood, Texas-raised Durhams and Devons, and have never had any losses from acclimatization fever or experience in regard to that disease.

In answer to your second question, I will state that in September, 1880, I purchased in Austin County, Texas, 1,100 head of stock cattle, and during the same month brought them to this ranch and allowed them to pasture on the same range with my native cattle. During the summer of 1881 I also purchased about 600 head of stock cattle in Nacogdoches and Rusk Counties, in Eastern Texas, and allowed these also to pasture with my other cattle. Out of 6,000 head no disease of any kind, to my knowledge, ever appeared amongst them, and the cattle from the counties named began to show immediate signs of improvement from the day they arrived on the range.

VICTORIA COUNTY.

Mr. N. C. Gullett, Victoria.—I am in receipt of your circular letter to "Texas cattle owners," and although not a resident of any of the counties named therein, as a resident of Southwestern Texas, I take the liberty of answering the questions made in your letter.

(1) For a number of years graded cattle have been introduced most successfully in this and surrounding counties from the States of Kentucky, Missouri, and Ohio; and only last year Mr. J. W. Lake, of Newark, Licking County, Ohio, brought down fully 100 head of graded stock from the State of Ohio, and selling in Victoria, Goliad, Bee, and Refugio Counties, sold on time with guarantee against disease and death from disease. And, as he will tell you if you will address him on the subject, his guarantee was without loss to him, as he collected on all animals sold. I have 1 or 2 improved animals I bought from D. M. Wilson, who has been importing fine stock from Missouri for the last seven years.

To inquiry number two, I would state that the cattle from this section and those of the counties named have come in contact almost every year, and have grazed together on the same pastures without either classes being affected in the least; and as evidence of the falsity of the charges to the contrary, I would only cite the fact that at present this section is selling thousands of cattle to the owners of the ranches in the Territory, Pan-handle, and in New Mexico and Colorado, who are moving them north to and across the thirty-fourth line, when they will call them high-bred Northern cattle, and be loudest in raising the cry of quarantine against "Texas fever." As a matter of course, the cattle they are getting from here now, although finer than ever before, are being sold to them very cheap in consequence of this prohibition, to-wit, one-third less than last year, all of which is very detrimental to the industry and has caused heavy loss here.

WILLIAMSON COUNTY.

Messrs. D. H. & J. W. Snyder, Georgetown.—Referring to yours of April 25 we will state that we have been engaged in the cattle business exclusively since 1868, and during that year drove cattle to New Mexico and sold at Fort Union. In 1869 we drove to Kansas; in 1870 to Schuyler, Nebr.; in 1871 to Cheyenne, Wyo. We also drove the same year to Idaho. We have been driving and ranching in Wyoming and Colorado ever since. We now own the old Iliff range and cattle on the South Platte in Weld County, Colorado, in connection with Mrs. Iliff and Messrs. Brown, of Denver. We also own a large herd in Stonewall County, Texas, and in Mitchell and Tom Green Counties, Texas. We mention these facts to give you a correct idea of our knowledge and experience in the cattle business. In 1875 we bought a car-load of Shorthorned cattle, shipped from Boone County, Missouri, to this (Williamson) county, and lost 40 per cent. In 1876 we shipped a car-load of 25 head from Cheyenne and lost only 3 head. We have had other shipments since from Missouri and Kentucky, losing from 33 to 50 per cent. We have known of several shipments along the line of the Texas and Pacific Railroad, west of Fort Worth, into the counties of Taylor, Nolan, Mitchell, Tom Green, and others, all of which have lost more or less from the same cause—acclimatization fever. We have driven cattle from the coast of Texas, and from all other parts of the State as far north and west as the counties above named to our ranches in Colorado and Wyoming, Kansas and Nebraska, and have never lost by coming in contact with them. We have as fine a bred herd on our ranch in Colorado as there is anywhere in that country, and do not consider that we are taking any risk in driving cattle from any part of Texas and turning them loose on our range with our native-

bred animals, but at the same time we think there is great risk in shipping cattle direct from the coast, or Southern Texas, to any of the Western States or Territories. We know of several cases last year where cattle were shipped directly through from Southern Texas, in which they communicated disease to our native cattle, and the loss was heavy, we being among the losers. We do not know of any disease in changing cattle from one portion of Texas to another where they have been driven.

WHEELER COUNTY.

Mr. R. M. Allen, Mobeetie.—We turned loose 77 bulls from Illinois, in Mitchell County, on the Colorado River, 20 miles south of Colorado City, in 1882, and estimated a loss of about one-third by the end of the following year from acclimatization fever.

Do not know by personal observation of Eastern Texas cattle turned loose in said counties and effect of same. Beside latitude, the care and attention that animals receive on the trail enter into this question, and to fix a line is a most difficult matter.

The Texas and Pacific road is as good a line as any other, and to fix this line works far less injustice than not to have any.

COLORADO.

Mr. A. M. Pryor, Pueblo, Colo.—Your communication of April 18 received this morning. In reply I will say that the counties you mention are, in my opinion, free of Texas fever. I have driven cattle from the counties you mention to Colorado since 1867, and I have never seen a case of Texas fever in Colorado until last season, and the cattle that diseased the native cattle here were shipped from Southern Texas. We drove cattle in here last year from Southern Texas, watered them at the same lakes that our best natives watered at, grazed over the same ground, and turned them loose to winter together, and not one of our natives died until late in the winter. Of course, we expect to lose a few cattle from natural causes. However, our losses were very light the past winter. We are having nice rains and snows now, and cattle will soon be in fine condition.

MISSOURI.

Mr. John O. Wood, Canton, Mo.—In compliance with your request for information in reference to Texas cattle, I would say that I have been engaged in cattle-raising in Throckmorton County, Texas, for ten years, and have shipped bull calves to Texas from Missouri at different times; in all, 81 head. Eleven head died, but I found they did not die of Texas fever, but from acclimatization, and not one of those that I kept up and fed and cared for died. This takes about 75 days. I have always taken bulls there late in November or early in December. I have shipped steers twice from Texas to Missouri and put them among native cattle early in November, and no sign of disease appeared among my natives. One shipment was made from Tarrant and one from Throckmorton County. In 1880 a lot of Rio Grande (Texas) cattle came through my range and infected my cattle with Texas fever and several of them died. Also in 1880 I had a lot of beeves driven up to Caldwell, Kans., and several of them took Texas fever from Southern cattle that had been driven over the trail. I never feel the least afraid of Northern Texas cattle being put with my natives here in Missouri.

Mr. George H. Goddard, Saint Louis.—In reply to your official inquiry addressed to cattlemen of Texas, I would state that I have over 15,000 head of cattle, located on the Pecos River, in Tom Green County, Texas. Three years ago I purchased 150 three-quarters Shorthorn bulls from Motley County, Texas, and moved them to my place in May without loss from acclimation. Two years ago I purchased 15 high-grade Herefords in Kentucky and shipped them to my ranch in April without loss. February, 1884, I purchased from Gentry, of Suabia, Mo., 100 high-grade Shorthorns from seven-eighths to fifteen-sixteenths thoroughbreds, and shipped them to my ranch without loss, and last December I saw the most of them in the general "round-up," looking splendid.

WYOMING.

Mr. A. S. Mercer, Cheyenne.—With pleasure I note your remarks in the press dispatches of this morning about the Texas dead-line, and when our folks properly understand this matter, North Texas cattle will be admitted into Northern ranges; but there is a world of educating to be done. To show you what my views on this subject are I inclose you an editorial from the *Journal* of April 3. I am familiar with the whole of Northwest Texas and know whereof I speak:

"*Kansas and Texas.*—The *Texas Live-Stock Journal* seems to think that a large number of Texas cattle will be admitted into Kansas by the sanitary board after a few days' detention on the border, in company with native cattle put into the herds, to

determine whether there is a fever germ among them. We think that olive branch of peace that is being held out to Texas drovers is deceptive and should not be borne aloft. There is no doubt in our mind as to the fact that all native cattle north of the Upper Cross Timbers in Texas are as free from splenic fever as are those of Colorado and Kansas. But the herds made up in those sections are so frequently mixed with Southern Texas cattle previously brought in that it is very difficult to get a clean bill of health. Experience on the border shows beyond any question that there is no definite time between exposure to and development of fever. Ninety days is as short a time as is absolutely safe. It has been known to develop at any and every period between ten and ninety days. Hence any such test as above mentioned is valueless, except at the end of the ninety days, and the sanitary board is not likely to make any rule that has an uncertain sound among the people who have forced the quarantine measures and to whom the board is responsible.

"The people owning the cattle in the district where the fever is known to germinate have a right to know exactly what to expect, and should not be buoyed up by false or deceptive utterances that might lead them into trouble. If the gentlemen from the coast know their cattle cannot come in under ninety days they will be loth to drive from Wichita Falls or Harold and take the chances of selling their cattle in the autumn at such figures as those who have range and feed may choose to offer. The fact is that all cattle from what may be termed the infected district will be religiously kept out until the law has been fully enforced. The line of infection is the difficult thing to establish, but when once settled it will be a 'sure enough' dead-line.

"The western or northwestern edge of the Upper Cross Timbers may be taken as a *safe* line, so far as the North is concerned. There are a few counties south and east of this that would probably be safe sections to receive cattle from, but the line would be crooked and uncertain. The question can be determined by honest care, and the people of Texas are as much interested in the matter as those of the North. Any county in North Texas where the native cattle take the fever from coming in contact with Southern Texas cattle is a safe country from which to receive native cattle. And the reverse proposition is true. It is a little difficult to get at an exact, or positive, line just as it is difficult to determine the point where two nicely-shaded lines on a picture blend. There is a sort of middle ground in the picture where the colors cannot be distinguished. So there is a neutral strip on this line of infection. But the line as laid down above is on the side of absolute safety. When properly adjusted there will be a safe inlet for all of the steers from North Texas, and that section is really in the same boat with Kansas and Colorado.

"Instead of a misunderstanding and pulling apart, the people of the South and the North want to enter upon a concert of action that will develop all the facts about splenic fever and enable them to shape their action as to bring about trade and market relations to their mutual interests. Self-preservation is the first law of nature, and the Texan is as quick to assert it as the citizen of Kansas or any other country. But a knowledge of all the facts will aid all those in interest."

REPORT OF S. P. CUNNINGHAM.

In order to gain all the additional information that could be obtained at this time, Col. S. P. Cunningham, an employé of the Bureau of Animal Industry, was directed to make a trip across Texas through the section of the country where the boundary line of the infected district was believed to run, and to gather all the known facts bearing on this question. Colonel Cunningham made this trip and submitted the following report:

SIR: I have the honor to submit the following report of my labor and its results, as an employé of the Bureau of Animal Industry, since my appointment to date. This report would have been in your hands sooner had it not been held back in order to secure information that I knew would have great bearing on its value, and when most of this had been collected I was taken with illness, and write now on a bed of fever. I was appointed July 1, 1885, by Hon. Norman J. Colman, Commissioner of Agriculture, and notified that you would furnish me instructions as to the field and scope of my labors. Under date of July 9, 1885, I received the following from you:

"I desire that you should obtain as accurate information as possible in regard to the movement of cattle from Texas during the present summer. We are anxious to locate the Texas fever line across Texas, and want all the definite and reliable information on this subject that can be obtained."

Accompanying this were questions showing the character of information needed. You also instructed me to obtain from the proper State officers at Austin a statement showing the number of cattle in each of the counties of Texas according to the latest

returns. The movement of the cattle from the State to Northern ranges had already begun; but, owing to a misunderstanding between the occupants of what is termed the neutral strip (a map of which I sent you some time since), and the owners of the herds on the trail, there had occurred a serious blockade near Camp Supply, in the Indian Territory. I proceeded to this point, going via. Dodge City, Kans. I sent you report of the situation, after seeing a large number of the cattle, their owners, and the ranchmen of the strip early in August, and while there arranged to secure and have secured since a complete list of all the cattle that left Texas this season by this Dallas trail, as it has been termed. There were 31 herds passed between July 18 and September 10, 1885, numbering 78,133 head, and all in apparent good health except a few, which died from poverty and black-leg. I have the name of every owner, the number in herd, destination, and the counties in Texas they started from. About the 20th of August I was notified by the secretary of the Western Kansas Association, of Dodge City, that fever had made its appearance in several herds in the strip near the Dallas trail, chargeable to the trail cattle, so I returned to Dodge City for the purpose of investigation. On reaching that point I found Dr. Holcombe, State veterinarian of Kansas, there, investigating in the Y pasture where the outbreak was claimed to have been greatest. While awaiting his return I was fortunate in meeting the owners and foremen of nearly every ranch on the strip that had been reported to me as having fever, and they denied the existence of any outbreak. Dr. Holcombe, on his return, informed me that he, accompanied by Dr. P. Harden, veterinary surgeon, had spent ten days in searching for cases in this pasture and found *one* dead cow, which had been dead over twenty-four hours, yet from autopsy they both determined she had died from fever. Returning to Texas I found letters from the Pan-handle, notifying me of a fever outbreak in Donley County. I started on September 15, and found quite a serious outbreak had occurred among the native and graded cattle in the Cowhart & Co. pasture, near Clarendon. I sent you a report at the time. I have since traced the cause of the outbreak and found it due to cattle shipped from Kaufman and Houston Counties. The epidemic was of short duration, and the percentage of deaths less than in ordinary seasons, proving more fatal among high graded cattle than native Spanish, yet several deaths occurred among these. The losses in this locality I do not think exceed in all 75 head. Messrs. Finch, Nelson & Co., Rowe Bros., and Curtis & Atkinson are reported to me as having lost fully 200 head this season, the former from the passage of the Kaufman cattle through their ranges, the two latter from cattle from Grimes and Limestone Counties. While on this strip I arranged to secure a list of all the cattle that had crossed at Doan's store into the Indian Territory going North, and have since received it. From it I find the drive foots up by this route for 1885, 240,354.

Having sent out the circulars from Commissioner Colman in regard to disease and acclimation of cattle, I determined, from receiving so few replies, to travel over the ranges from Red River to the Rio Grande. As it was not practicable to make this trip by public lines of travel, I secured a good team, guide, and hack, and arranged to start October 1. But receiving notice of an outbreak of fever in Wheeler County, Texas, I shipped my outfit to Harold, Tex., and then crossing at Doan's proceeded to Mobeetie, from which point I reported to you the result of the outbreak. Returning to Red River at Doan's, I continued my long journey to the Rio Grande, and send you herewith the result of that trip.

The accompanying map, with the marked line (1) is the one from information gathered on the road that would be above any remote danger of infection. Starting as it does at the northeast corner of Clay County, including that county and Archer, thence south on east line of Throckmorton to the Clear Fork in Shackelford, I was induced to place this line from the following facts obtained from Messrs. Curtis & Atkinson, W. C. Worsham, Ikard Brothers, Hon. J. N. Simpson, H. C. Bedford, and a number of other gentlemen who are strictly reliable, and who have been ranging in this section for years. These gentlemen all agree that this line, drawn as it is north of the Cross Timbers, is in a high, healthy latitude; that cattle reared there are as free from imparting fever to the cattle of the Northern States or Territories as the cattle of Kansas or Colorado; that they are subject to infection from contact with coast cattle, and that while cattle of improved breeds when brought from colder latitudes are subject to acclimation fever, the losses are slight, and when properly cared for do not exceed 10 per cent. Then following on this line (1) south as laid out on the map to the Colorado River, my judgment is supported by the report of a committee of the Brazos and Colorado Cattlemen's Association, herewith submitted, marked A. After crossing the Colorado River and on to Eagle Pass, I have similar testimony of many ranchmen as to the safety of the line. Now, I wish to be clearly understood that I do not hold that I reach in this line the southern limit where infection begins; the vast extent of territory to examine, the impossibility in a few months of gaining all desired information, renders it impossible to absolutely define a line above which all cattle are free from imparting this disease and below which all give off the fever. Yet I do unhesitatingly affirm that this line is as safe and reliable as any parallel of latitude hith-

erto named by State sanitary boards. At the recent national convention in Saint Louis I had a consultation with Western and Southern ranchmen from New Mexico and Colorado, and from Southwest Texas and the Pan-handle, and they suggested the line marked as No. 3 to be safe. This is to start at Laredo and follow the International Railroad to Taylor, in Williamson County, thence via. Missouri Pacific Railway to Fort Worth, then via. Fort Worth and Denver to Bowie in Montague County, thence due north to Red River. A line (No. 2) from Eagle Pass to Red River was held as perhaps a satisfactory temporary line, but Messrs. R. G. Head, J. N. Simpson, and J. W. Little rather favored line No. 3, from Laredo to Colorado River to Austin, thence up said river to line No. 1, at corner of Coleman and Brown Counties, and then north with said line No. 1 to Red River.

I submit these various lines for your consideration and action, and only regret that there is not more complete data to give you on this important subject. The stockmen of Texas and the ranchmen of the North and West have been brought nearer together by the efforts of the Bureau, and I am satisfied that during the next six months I will be able to gather much reliable information in regard to this disease. Investigations so far this season show the cattle found infected with fever received it from cattle that came from east and south of line No. 3.

Indeed, Kaufman, Houston, Grimes, Limestone, and Freestone County herds are the only ones that were proven to me as having caused infection. As soon as statistical data are collected at Austin I shall forward to you.

Very respectfully,

S. P. CUNNINGHAM,
Employé Bureau Animal Industry.

Dr. D. E. SALMON,
Chief of Bureau of Animal Industry.

In connection with this report Colonel Cunningham submitted the following report of a committee appointed by the Brazos and Colorado Cattle Association:

ABILENE, TEX., *November* 10, 1885.

SIR: As you remember, I, in conjunction with two other members of the Brazos and Colorado Association, was appointed a committee to gather up and present to you the facts regarding splenic, Spanish, or so-called Texas fever, as it affected the range or ranch cattle within the boundaries of this association, an association that extends from the Clear Fork of the Brazos River on the north to the southern limits of Coleman and Runnels Counties on the south, from the west line of Eastland County on the east to Martin and Howard Counties on the west, embracing the counties of Stephen, Shackelford, Jones, Fisher, Scurry, Mitchell, Garza, Borden, Martin, Howard, Midland, Nolan, part of Tom Green, Runnels, Taylor, Callahan, and Coleman, and covering a cattle-range belt of some 300 miles east and west, and 200 miles north and south, and on which at present 400,000 range cattle are run. The climate is dry, range mesquite, free from post-oak, water good, altitude averaging over 1,400 feet. Cattle raised here are very healthy and free from giving off any contagious diseases. At times our county has been charged with spreading splenic fever, but this, when traced to its origin, has invariably shown the fever originated in and was propagated by cattle coming from the coast country. Living and ranching near the center of this belt in Jones County for near seven years, running from 5,000 to 10,000 cattle, we have had no trouble, and never had our herd or young cattle from it suspicioned as spreading fever when sold to Northern ranges; and our committee know as well as yourself that the Spanish cattle in this belt, raised on our ranges, are as free from imparting disease of any kind as any cattle on the ranges of Montana, Wyoming, Nebraska, or Dakota. In regard to acclimation of Northern cattle on our ranges, we acknowledge the sudden change from a cold to a sultry climate gives a slight attack of acclimating fever similar in symptoms to splenic fever, yet when cattle from the North—high-grade bulls or full bloods—are brought in in winter and properly cared for the loss is very light, not exceeding 10 per cent. We and our association, as you well know, use high grade Herefords and Shorthorn bulls. Our grade cattle receive and are liable to splenic fever when brought in summer into contact with coast cattle. The above covers as near as we can hurriedly summarize the condition in our ranges. Anxious like yourself to get at the bottom facts of this business, we wish to uphold your hands in making a complete, thorough, and impartial statement of the situation.

Respectfully submitted,

W. J. BRYAN,
Chairman of Committee, for J. W. Nuen and J. J. Hittson.

Hon. S. P. CUNNINGHAM,
Animal Industry Bureau of United States.

The lines referred to by Colonel Cunningham in his report will be found on the accompanying map, and are numbered to correspond with the numbers used by him.

It will be observed that in the report of Colonel Cunningham, and in that of the committee of the Brazos and Colorado Association, the statements in regard to this disease are general and apply to a large district of country without any definite detailed facts in support of them. This difficulty has been encountered with many reports received from the State of Texas. Different organizations of stockmen and different individuals have different ideas as to the location of the infected district in the State, and these are usually presented in general terms as conclusions from their experience in the country referred to. It is evident that a definite line cannot be traced from such information as this. The opinions of different individuals will vary, and that of the same individual, from year to year, according to his experience at the time. The only way to draw a definite and safe line of demarkation is to consider the definite observations of cattlemen as to the effect of moving cattle from one given part of the State or of the country to another given point. When a large number of such observations are collected then we have reliable data upon which to found an opinion that cannot but be in accordance with the facts. Believing this to be true, I have taken into consideration the definite statements which have been given in full above, and I have drawn a line from the Red to the Rio Grande Rivers in such a position that I think it may be assumed that all the country west and northwest of that line is free from any permanent infection, and the native cattle from it may be safely taken to any part of the country without disseminating the contagion of Southern fever. I would repeat here what has been said in regard to other States, that all the country east and southeast of this line must not be considered as permanently infected; undoubtedly there are considerable sections, possibly whole counties, which are free from the contagion of this disease, and from which cattle might be safely taken to Northern States.

The counties most likely to be uninfected, I judge, from information received from the leading stockmen of Texas, are Shackelford, Callahan, Taylor, Runnels, Coleman, Concho, McCulloch, San Saba, Mason, Llano, Gillespie, and perhaps others which are of a more or less mountainous character.

The line which is drawn must, therefore, be considered as a preliminary line, based upon such positive information as we have been able to collect, and is subject to revision and change according to investigations which may be made in the future.

In case the National Government attempts to regulate the movement of Texas cattle and makes a distinction between the infected and the uninfected portions of the State, I would strongly recommend that experiments be instituted to determine from what counties east of this preliminary line cattle may be safely taken to uninfected sections of the country. The quarantine restrictions of Kansas and other Western States considered all that part of Texas south of the thirty-fourth parallel of latitude as infected and the cattle from all this part of the State as liable to disseminate the disease. These regulations were doubtless based upon the most authentic information that could be obtained at the time, but it seems very certain from the facts given above that such a division of the State does great injustice to many of the western counties, and if the preliminary line which I have indicated should be adopted cattle from a large section of the State would be allowed to go anywhere without restrictions, and this may be safely done, although

under the regulations of the past year they would have been considered infected cattle. The cattle from east of this line might be allowed to go into other States and Territories as usual, provided they are restricted to well-defined trails and are not allowed to go upon the ranges of susceptible cattle until three months have elapsed since they were driven from the infected country. During the winter months there would be no necessity for any restrictions.

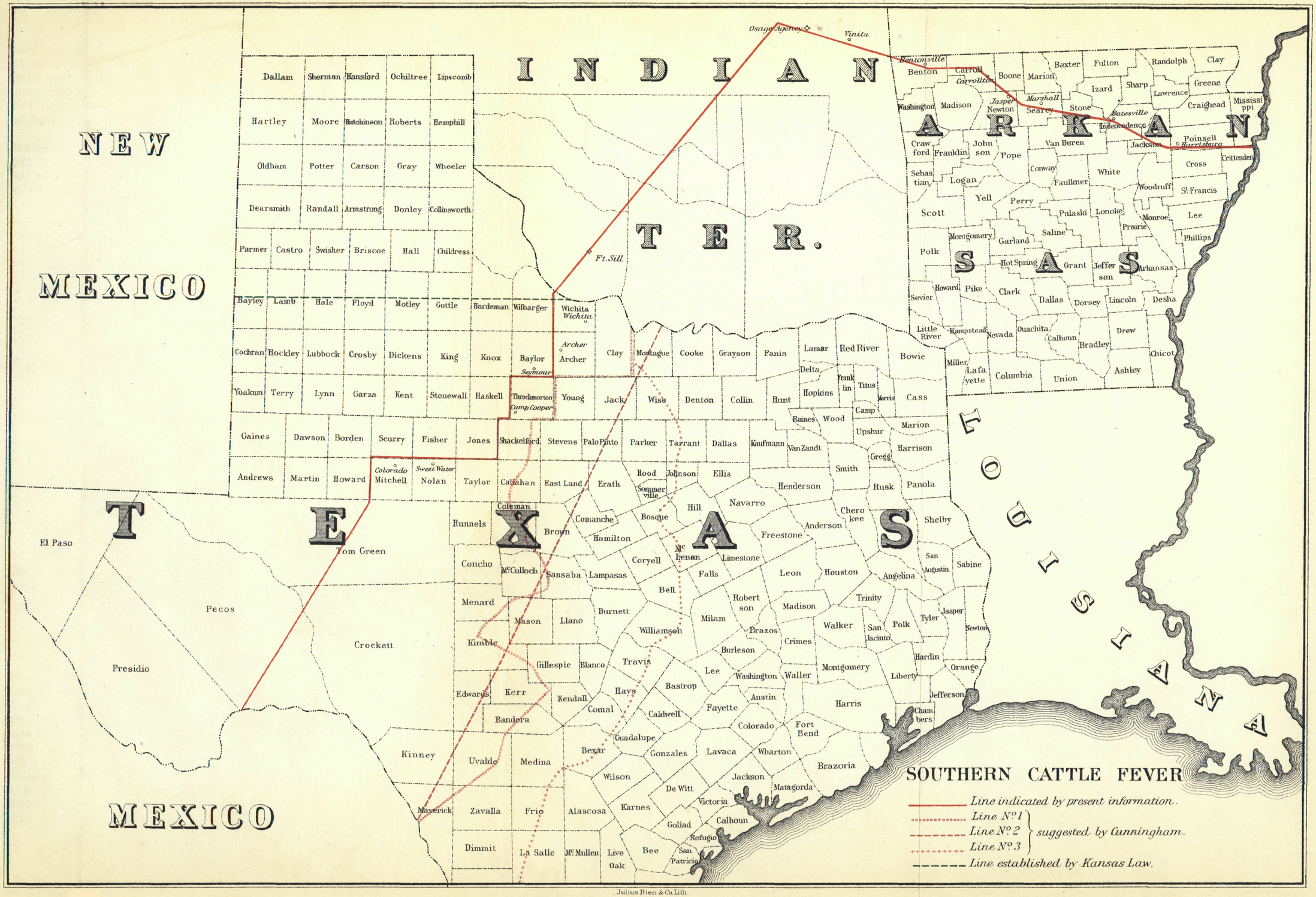
To show the number of Texas cattle west of this preliminary line that may be allowed to move anywhere without restrictions, I append the following table, which gives the cattle in those counties assessed for the year 1885, as compiled from the records of the State and certified to by the comptroller:

County.	Number.	County.	Number.
Andrews	402	Hutchinson	31,700
Armstrong	46,414	Jones	30,172
Bailey	700	Kent	53,570
Borden	22,201	King	59,843
Briscoe	None.	Knox	19,085
Carson	None.	Lamb	6,700
Castro	None.	Lipscomb	20,200
Childress	81,140	Lubbock	6,092
Cochran	None.	Lynn	None.
Collingsworth	12,554	Martin	3,177
Cottle	39,767	Moore	None.
Crosby	59,885	Motley	81,233
Dallam	None.	Ochiltree	36,717
Dawson	None.	Oldham	70,772
Dearsmith	None.	Parmer	None.
Dickens	106,545	Pecos (two-thirds)	38,644
Donley	40,446	Potter	46,000
El Paso	24,916	Presidio	73,975
Fisher	59,202	Randall	18,000
Floyd	19,600	Roberts	220
Gaines	725	Scurry	44,619
Garza	36,150	Sherman	75
Gray	3,275	Stonewall	59,540
Hale	6,002	Swisher	None.
Hall	15,874	Terry	None.
Hansford	2,550	Tom Green (one-half)	146,598
Hardeman	46,141	Wheeler	17,260
Hartley	None.	Wilbarger	13,043
Haskell	7,094	Yoakum	None.
Hemphill	24,709		
Hockley	None.	Total	1,557,503
Howard	24,066		

As the total number of cattle assessed in Texas for the year 1885 was 6,939,901, it will be seen that nearly one-fourth of these are in the district west of the preliminary line referred to above.

THE GAPE DISEASE OF FOWLS.

In the first annual report of this Bureau a complete translation was given of M. Megnin's paper on the *syngamus trachealis* and the disease which it causes. After the publication of that report Dr. H. D. Walker, of Franklinville, N. Y., called our attention to the fact that he had been making some investigations of this subject which had led him to conclusions that would very greatly modify the generally accepted views as to the manner in which the parasite gains access to the body of the host, and also in regard to measures of prevention. To obtain additional light upon this important question Dr. Walker was employed to repeat his experiments, to furnish material with which control experiments might be made in the laboratory of this Bureau, and to sup-


NEW MEXICO
INDIAN TER.
ARKANSAS
LOUISIANA
TEXAS
MEXICO
Osage Agency
Vinita
Fayetteville
Batesville
Harrisburg
Ft. Sill
Wichita
Archer
Seymour
Throckmorton
Camp Cooper
Colorado
Sweet Water
Coleman
McCulloch
McLennan
Milam
Williamson
Travis
Bastrop
Lee
Washington
Austin
Fayette
Colorado
Fort Bend
Harris
Brazoria
Matagorda
Wharton
Jackson
Victoria
Calhoun
Refugio
San Patricio
Bee
Live Oak
McMullen
La Salle
Dimmit
Zavalla
Frio
Alascosa
Karnes
Goliad
De Witt
Wilson
Gonzales
Guadalupe
Bexar
Medina
Uvalde
Kinney
Maverick
Kerr
Kendall
Comal
Hays
Caldwell
Bandera
Edwards
Gillespie
Blanco
Kimble
Mason
Llano
Burnett
Menard
Concho
Runnels
Coleman
Brown
Comanche
Hamilton
Coryell
Bell
Falls
Limestone
Freestone
Leon
Houston
Robertson
Madison
Brazos
Burleson
Crimes
Walker
San Jacinto
Polk
Trinity
Tyler
Jasper
Newton
Sabine
San Augustin
Angelina
Shelby
Anderson
Cherokee
Navarro
Hill
Johnson
Somervell
Hood
Bosque
Erath
Eastland
Callahan
Taylor
Nolan
Mitchell
Howard
Martin
Andrews
Shackelford
Stevens
Palo Pinto
Parker
Tarrant
Dallas
Kaufmann
Van Zandt
Henderson
Rusk
Panola
Smith
Gregg
Harrison
Upshur
Marion
Cass
Wood
Camp
Raines
Titus
Morris
Franklin
Hopkins
Delta
Lamar
Red River
Bowie
Fannin
Grayson
Collin
Hunt
Denton
Cooke
Montague
Clay
Young
Jack
Wise
Throckmorton
Baylor
Knox
Haskell
Stonewall
Kent
Garza
Lynn
Terry
Yoakum
Cochran
Hockley
Lubbock
Crosby
Dickens
King
Gottle
Hardeman
Wilbarger
Bayley
Lamb
Hale
Floyd
Motley
Parmer
Castro
Swisher
Briscoe
Hall
Childress
Dallam
Sherman
Hansford
Ochiltree
Lipscomb
Hartley
Moore
Hutchinson
Roberts
Hemphill
Oldham
Potter
Carson
Gray
Wheeler
Dearsmith
Randall
Armstrong
Donley
Collinsworth
El Paso
Tom Green
Pecos
Crockett
Presidio
Benton
Carroll
Boone
Marion
Baxter
Fulton
Randolph
Clay
Washington
Madison
Jasper Newton
Searcy
Marshall
Stone
Izard
Sharp
Lawrence
Greene
Craighead
Mississippi
Crawford
Franklin
Johnson
Pope
Van Buren
Independence
Jackson
Poinsett
Crittenden
Cross
Sebastian
Logan
Conway
Faulkner
White
Woodruff
St. Francis
Yell
Perry
Pulaski
Lonoke
Monroe
Lee
Scott
Montgomery
Garland
Saline
Prairie
Phillips
Polk
Hot Spring
Grant
Jefferson
Arkansas
Howard
Pike
Clark
Dallas
Dorsey
Lincoln
Desha
Sevier
Little River
Hampstead
Nevada
Ouachita
Calhoun
Bradley
Drew
Chicot
Miller
Lafayette
Columbia
Union
Ashley
SOUTHERN CATTLE FEVER
Line indicated by present information.
Line No. 1
Line No. 2
Line No. 3
suggested by Cunningham.
Line established by Kansas Law.
Julius Bien & Co. Lith.

ply a complete set of his microscopical preparations for study. We have only space to give the more important parts of this work. Dr. Walker, believing that the embryo of this parasite has an intermediate host in some invertebrate, living on the infected grounds, came to the conclusion that the earth-worm must be the animal in question. His experiments are quoted in the following pages:

Experiment 1.—On September 29, 1883, at 8.30 a. m., a chick about one week old was fed ten earth-worms from the bare spot of ground by the side of the coop where the chicks had the gapes. The worms were carefully washed in water to remove all the dirt adhering to them, which might contain the eggs or embryos of *syngamus*. On October 6, at 7.30 a. m., six days and twenty-three hours after the feeding, I observed the first symptoms of the gapes. On October 7, at 10.30 a. m., eight days and two hours after feeding the chick, and twenty-seven hours after the first symptoms of the disease, I killed it and found twenty-six gape-worms.

Experiment 2.—On October 9, at 8 a. m., another chick a little over two weeks old, was fed four earth-worms from the same place, with like precautions. At the same time of day, on the 10th, it was fed six worms. On the 11th, 12th, 13th, 14th and 15th, it was fed ten worms daily. At the same time from the first feeding, a little less than seven days, it had the gapes. It was killed in eight days, and twelve gape-worms found, all in the trachea.

Experiment 3.—Commencing on November 13, three chicks, two days old, were fed earth-worms from my garden, eight, nine, and ten days, respectively. No symptoms of the gapes were produced, but to determine positively, the one fed nine days was killed, and no gape-worms found. This experiment shows that all earth-worms do not contain the embryos of *syngamus*. To confirm this, earth-worms from the same place have been repeatedly examined with the microscope.

Experiment 4.—Two mature *syngami* were broken in pieces so as to free the eggs. They were then placed on the surface of a dish filled with dirt, well moistened with water. After two weeks, some earth-worms were placed in this dish and allowed to to remain ten days. Three of these were fed to a chick, which was carefully watched for two weeks. No symptoms of gapes were discovered. Evidently the embryos had not obtained access to the earth-worms in sufficient numbers to produce the disease in chicks.

Experiments 5 *and* 6.—On December 13, two chicks, four weeks and four days old, were each fed six earth-worms, from the infected spot, with the same precautions as before. On the 15th, 16th, and 17th, the feeding of six worms was repeated, making twenty-four to each chick. On December 20, about seven days as before, they had the first symptoms of the gapes. One was killed and twenty-two *syngami* found. On December 24, eleven days from the feeding, the other was killed and sixteen found. All of them were united and in the trachea. None were found in the lungs, but it is probable they were there, and want of experience in the search prevented their discovery.

Experiments 7, 8, *and* 9.—On April 21, 1884, fed three chicks two days old, each five worms, from the same place where the others were obtained. Repeated the feeding on April 22, 23, 24, 25, 26, and 27. On April 28, about seven days from the first feeding, all had the gapes. One was killed and *syngami* found in the trachea, also three pairs in the lower part of the left lung, and one pair in the lower part of the right lung. Continued to feed the two remaining chicks earth-worms, until May 5, just two weeks from the first feeding, when one was killed and the lower part of the trachea found crowded with *syngami*. One of these measured seventh-eighths of an inch in length, and two or three others three-fourths of an inch. They contained fully developed eggs, as did also the excretions of the chick just before it was killed. This proves that the embryo of *syngamus* in the earth-worms is developed to maturity in two weeks from the time it obtains entrance to the chick.

Experiment 10.—On July 16 fed a chick ten earth-worms, and repeated the feeding for nine successive days. The gapes observed on the seventh day as usual. On July 26, ten days from the first feeding, I killed this chick and found a large number of *syngami* in the trachea, and also the embryos in different stages of growth in the lungs.

Experiment 11.—In order to see if Dr. Megnin's theory was correct, that the eggs would develop within the fowl, I fed a chick, about three weeks old, on July 29, three perfect *syngami*, containing many thousands of eggs. This chick was carefully watched for five weeks and no symptoms of gapes observed.

Experiment 12.—Three young robins (*Turdus migratorious*) in the nest, fed several infected earth-worms each daily for twelve days. These earth-worms were taken from the same place as those fed the chicks. No well-marked symptoms of the gapes were observed. Two of them were killed and three or four gape-worms found in the trachea of each. A number were also found in process of development in the lungs.

These birds live almost entirely on earth-worms during a part of the year, and I wished to know whether they would serve as a host for the parasite, and thus be instrumental in spreading the disease. The trachea of robins differs from that of poultry in its size and anatomical structure, especially at its lower part, where the last ring dilates and forms a second larynx. *Syngami* generally collect from the lower part of the trachea to its middle, and the gapes is simply the effort of the bird to obtain more air through this passage, which is obstructed by these worms. It is evident, therefore, that birds which have a larger trachea would harbor a greater number of *syngami* without suffering from the gapes. We see this is the case in chicks after they are several weeks old, for *syngami* can often be seen in their windpipes by opening their mouths and straightening out their necks. Several worms can thus be seen in large chicks with very little embarrassment to respiration. It is also not improbable that although the embryos may penetrate the œsophagus, pass to the lungs, and thence to the trachea, the greater part may be coughed up and swallowed before they are able to obtain a hold on its mucous membrane. We know from an examination of chicks that very many of them are thrown off in this way.

Experiment 14.—On July 4, at 5 p. m., fed a chick about four weeks old a large number of *syngami* just hatched, by turning the water containing them down its throat. On July 11, at 7 p. m., this chick commenced to have the cough or sneeze characteristic of the gapes. July 12 coughs much more. On July 13, at 9 a. m., eight days and sixteen hours after the feeding, I killed the chick and found one single and twenty-nine pairs of *syngami*.

Experiment 15.—On August 14, at 7 p. m., fed a young robin just from the nest a large number of embryo *syngami*, hatched in water, as in the preceding experiment. It was kept in a cage, hanging under a tree, and fed by the old bird. August 22 (morning), robin has some symptoms of the gapes, such as rapid breathing, an occasional gape and shake of the head, and is inclined to sit on its perch instead of standing up as usual. August 23, breathes more rapidly and is evidently quite sick. August 26, continues to grow weaker and breathes more rapidly, and at times gapes, but the gaping is not as prominent a symptom as in the case of chicks. On the morning of the 20th the robin died, the fifteenth day from the feeding. On examination three fair-sized *syngami* were found in the trachea, but not enough to fill it up, so as to produce much gaping.

Earth-worms from infected localities were sent to us by Dr. Walker, in order that we might confirm his results:

May 25.—Three chicks were fed with 8 worms each. One was killed June 4. No evidence of syngames in the entire trachea. Near the pharynx a few blood extravasations on the œsophageal mucous membrane attracted our attention. When carefully examined several small nematode worms were found in the submucous tissue, filled with ova. They were not coiled up but lying in a wavy line. Whether these parasites were introduced with the earth-worms is a matter of conjecture. June 23, the two remaining chicks were set free.

July 1.—Two chicks were fed for two days until one had eaten sixteen, the other eight worms. July 7, two were fed until each had consumed twelve worms. July 24, symptoms pointing to gapes were observed in two of these four chicks. One was killed July 28, and three pairs of adult syngames found in the trachea. The other gaped occasionally, but grew very fast. It was killed August 6, and one pair of large syngames found attached to the trachea.

This pair was torn to pieces on the following day, and the mass, in which were large numbers of eggs, kept in distilled water. On August 17 the embryos could be observed moving about in the shell. Two days later many had left the shell. Thus a period of thirteen days, with an average temperature of 80° F., was sufficient for their development. When placed in distilled water August 6, the stage of segmentation was not yet passed. Megnin mentions twenty-eight to thirty days as the time required for development at a temperature of 68° to 77° F. The temperature of our laboratory ranged from 76° F. during the day to 88° F. at night.

On August 19, three chicks, one three days old, and two over a week old, were fed with these embryos and ripe ova. They were suspended in water and injected down the œsophagus with the aid of a pipette, each bird receiving about fifty individuals.

The younger chicks died on the 1st, 3rd, and 6th of September, respectively. In the last only one pair of syngames was found. Of

the two older chicks, one died September 8, without any worms in the trachea; the other was killed September 16, no worms found.

Thus our success was only partial, both in feeding earth-worms and embryos of syngames, while Dr. Walker obtained very positive results with both modes of infection.

The foregoing experiments show that earth-worms of infected places do contain the embryo. They also show that the earth-worm is not a necessary host, and therefore Megnin's views as given in the preceding report remain still in full force. The embryo is without doubt present in the earth-worm for the same reason that particles of earth, leaves, &c., are present. The earth-worm in boring into the soil must frequently swallow the earth that lies in its way, as pointed out by Darwin. That ova of syngames should be swallowed in this way is quite natural; and the embryos may even be used as food, and in that case killed before they leave the alimentary canal of the earth-worm. So that the question whether earth-worms are really injurious to farmers in eating ova or embryos of syngames can hardly be decided in the affirmative from these experiments. To Dr. Walker, however, belongs the credit of having pointed out the interesting fact that earth-worms of infected grounds may produce the disease in chicks which feed upon them.

Dr. Walker examined the alimentary canal of infected earth-worms carefully and found therein parasites which he believes were the embryos of *Syngamus trachealis*. We examined a number of worms sent by him very carefully, but failed to demonstrate the presence of any embryo smaller than the nematodes, which were quite uniformly present in the body cavity and inhabit the segmental organs. These measured about .5^{mm} (.02 inch) in length. Dr. Walker gives the length of the smaller embryo as .0118 inch. A certain gregarina (*G. agilis*?) was also frequently observed.

Dr. Walker also tried artificial culture of the embryos which he obtained from the alimentary canal of the earth-worm. For this purpose he used blood serum, into which they were placed and then kept in an incubator. The blood serum was changed every day. Some worms died within two days; others lived for five or six days, during which period he observed some to molt. The rapidity with which blood serum decomposes at a high temperature, the toxic effects of the products of putrefaction, and the poverty in respirable oxygen of this medium make such experiments difficult of execution and uncertain in results.

Dr. Walker suggests that the earth-worms of infected poultry-yards be destroyed. To do this the ground is to be covered with lime, salt, or ashes, of which substances he prefers the salt.

As to the possibility or desirability of exterminating the earth-worms from poultry-yards where gapes exist among the fowls, the experiments made are neither sufficiently numerous nor so definite in their results as to admit of a satisfactory conclusion. That chicks may contract gapes by feeding upon earth-worms that contain the embryos of *Syngamus* is demonstrated, but it has also been demonstrated that this is not the only way by which this parasite gains entrance into the body of the chick. To destroy earth-worms Dr. Walker recommends saturating the earth of poultry-yards with a solution containing 1 or 2 pounds of salt to a gallon of water. All interested in this subject should carefully read, in connection with the present remarks, the details of the measures of prevention suggested by M. Megnin (First Annual Report of the Bureau of Animal Industry, pp. 292–295); and in case of failure to arrest the disease by these measures, an attempt may be made to destroy the earth-worms according to the recommendations of Dr. Walker.

VERMINOUS BRONCHITIS IN CALVES AND LAMBS, AND ITS TREATMEMT BY TRACHEAL INJECTIONS.

The occasional appearance of the disease known as lung-worm disease in cattle and sheep, also called verminous bronchitis, the husk, hoose, parasitic bronchitis, phthisis pulmonalis verminalis, renders it important to put together whatever facts are known at present concerning the nature, cause, and treatment of the disease. The primary seat of the affection being the lungs, the disease might, on superficial examination, be confounded with the far more dangerous disease of pleuro-pneumonia, unless the symptoms and the means of diagnosis during life, as well as the appearance presented by the lungs on *post mortem* examination, be carefully noted. The life history of the parasites that are the cause of the disease is not yet fully known, although upon it depends the most important kind of treatment—that of prevention. The following pages contain the most advanced views, and it is to be hoped that the near future will convert these views into absolute facts upon which a rational prophylaxis may be based. The disease attacking sheep and goats is due to a nematode worm, *Strongylus filaria;* the parasite attacking calves, *Strongylus micrurus*, also found in the horse and ass, is closely related to the former. A third form, common in swine, *Strongylus paradoxus*, does not appear to cause any serious disturbances in swine. In an apparently healthy, fat pig, which was killed at the experimental station last year for another purpose, plugs of these worms were found in the smaller bronchi, enveloped in mucus. In a severe case of swine-plague, these same worms were found in the lungs plugging some of the smaller tubes. The lungs themselves were not hepatized, however, as is frequently the case in swine-plague, the lesions being limited mainly to the large intestine. Recently this parasite was found by A. Koch (*Die Nematoden der Schaflunge*, 1883) to infest in large numbers the bronchi of sheep in an epidemic of verminous bronchitis. The same observer also describes another parasite found in the lungs of sheep, the presence of which was characterized by nodular elevations on the surface of the lungs containing large numbers of hair-like worms (*Pseudalius ovis pulmonalis*).

The disease depends, according to most authorities upon the relative humidity of the soil, and is therefore most prevalent in low-lying, swampy pastures containing pools of stagnant water. Years of abundant rains are said to favor the outbreak of the disease for the same reason. Epizootics have, however, been observed in elevated regions, and in England it is asserted that hill farms suffer most from ravages of *Strongylus filaria*, the lung-worm of sheep. Davaine, eliminating the influence of moisture entirely, states that the only constant features of the disease are age and season. It is probable that outbreaks in elevated regions are exceptional and due to special causes. Young animals, calves from twelve to fifteen months old, and lambs, are most prone to suffer, yet cases have occurred in which adult animals have been attacked. Röll reports the disease in a cow eight years old. It is common during late summer and early autumn, although not limited to this period.

SYMPTOMS.

The disease symptoms are much alike in lambs and calves, both being due to mechanical obstruction of the smaller air-passages. They begin to appear in lambs and yearlings, when driven to pasture in spring and

fall, in the form of a severe bronchial catarrh. There is difficulty in breathing and a severe gasping, spasmodic cough. The cough generally comes on when the herd is driven to pasture. During the paroxysms, masses of mucus are occasionally discharged, with great effort, which contain eggs, embryos, and adult forms of the parasite. With increase in the intensity of these symptoms, emaciation goes on in spite of continued appetite. Anæmia appears characterized by a paleness of the skin and mucous membranes, the abdomen becomes enlarged, the eyes become dim; in sheep the wool comes away. Swelling may appear under the abdomen, at the joints, and under the jaws. Death from general debility finally terminates the gradual loss of vital powers. Sometimes the general plugging up of the smaller bronchi may bring about suffocation during a paroxysm of coughing. The disease in lambs, which is apt to be more severe in fall, may disappear in the spring in milder cases. A French observer reports in an outbreak in calves the presence of a painful cough, coming on in veritable paroxysms, far more violent than in simple bronchitis, and frequently leading to suffocation. Respiration is increased in frequency, the conjunctiva injected, the head extended on the neck, the mouth opened widely, and the tongue protruded to obtain air. The discharges from nose and mouth contain parasites.

The disease may last from two to four months and the prognosis is usually bad. Cases of suspected verminous bronchitis which die within a few days after the first appearance of symptoms ought to arouse suspicion and direct attention to a careful examination of the lungs and body generally immediately after death.

The above brief description of symptoms evidently refers to severe cases. The intensity of the disease is proportional to the number of parasities which have found lodgment in the lungs. In this disease, therefore, all grades of severity may be met with and many of the symptoms above enumerated may be entirely absent.

DIAGNOSIS.

In connection with a careful examination of the symptoms it is of importance to examine with a lens, or the naked eye if a lens be not at hand, the mucus discharged from nose and mouth. The adult worms will appear as small, white, interlaced filaments, like shreds of lint or white hair. Placed in tepid water, these often execute vermicular movements. The adult forms, especially the females crowded with eggs, appear like masses of coarse, white linen thread.

POST MORTEM APPEARANCES.

In an examination of the body of lambs and calves which have succumbed to the disease there will be found, besides absence of fat, effusion of serum into the pericardial, thoracic, and peritoneal cavities, the usual concomitant of great debility. The lungs are pale red, often nodular and adherent to the chest-wall. In places the lung tissue is solidified and sinks in water. The mucous membrane of the bronchi is inflamed and thickened in patches; sometimes there are blood extravasations and ulcerations. The bronchi are often enlarged or saccular. The parasites themselves are found in the trachea and bronchi, often rolled up into masses which occupy the recesses or sacs above mentioned, or plug up completely the smaller divisions of the bronchi. In the larger divisions

elevations or swellings are sometimes met with made up of nests of strongyli.

In the case of a cow which had suffered for months, and finally died from suffocation, Anacker, quoted by Zürn (*Die Schmarotzer, &c.*, p. 274), describes the lungs as follows:

> Bronchi filled with bundles of worms enveloped in a viscid, bloody mucus. The mucous membrane presented the appearance of a catarrhal inflammation. It was much reddened and studded with hemorrhagic points and patches. Lungs œdematous. Much serum flowed on cutting into them. Some lobules were inflated and slightly inflamed. Most were hepatized or solidified and surrounded by strips of tissue infiltrated with serum, so that they represented small oblong fields in which the alveoli, filled with pus, were recognizable as small gray nodules projecting slightly above the cut surface. The thorax and pericardium contained much serum.

Several calves affected with lung-worms were received at the experimental station October 21. One of them was killed for examination October 26. During its stay at the station there were no marked indications of pulmonary disease, excepting a cough, which slowly decreased in severity. There was no discharge from the nose, no difficulty in breathing. Physical examination revealed local loss of resonance and increased crepitation.

The lungs (Plates VIII, IX) had a normal appearance with the exception of some irregular patches of a dark red color, more numerous posteriorly where the pleura was also much clouded. On removing them from the thorax no adhesions could be detected. The posterior half of both lungs, however, was found doughy, not fully collapsed. Large masses of hepatized tissue were wedged in and bounded by normal tissue. The solidified portions were of a deep-red flesh color, with paler points scattered through it, representing the finest bronchioles. This tissue sank immediately when placed in water. There was no hypertrophy of the interlobular connective tissue. On slitting open the smaller bronchi bundles of adult worms were seen, almost filling up the lumen of the tubes. The worms were arranged parallel with one another, a few projecting from the opening of each smaller bronchus into the larger tube. (Plate IX, Fig. 2.) The mucous membrane of these tubes was pale and covered with a very slight amount of mucus.

Portions of the lung were placed in the refrigerator over night and examined on the following day, when the cut ends of the bronchi were found crowded with worms partly extruded. It was thought that the absence of respiration induced an outward migration of the worms and might explain the crowed condition of the larger bronchi. Of all the worms examined the caudal extremity was turned towards the trachea, however.

Scrapings from the mucous membrane of the bronchi and from the cut surface of the hepatized regions contained ova and active embryos. The embryos within the ova moved at intervals, proving that they were nearly prepared to leave the shell. The bronchi containing the parasites were quite uniformly surrounded with hepatized tissue. The bronchi penetrating healthy lobes were found empty.

In the disease of lambs recently minutely described by A. Koch (*loc. cit.*) the surface of the lungs is studded with ten to thirty yellowish nodular elevations varying from the size of a lentil to that of a walnut and elastic to the touch. Smaller nodules about the size of a hemp-seed usually accompany the others, but are situated near the borders of the lungs. On section these nodules are observed to represent modified air-cells filled with a milky fluid, and containing small, hair-like, interlacing, filamentous worms scarcely distinguishable with the naked eye. Under

the miscroscope large numbers of eggs and living embryos are also found. These nodular elevations have been described by other authors in connection with various forms of verminous bronchitis, but it now seems probable that they are produced by but one kind of parasite (*Pseudalius ovis pulmonalis*).

DESCRIPTION OF THE PARASITES.

The lung-worm of cattle is described by Schneider (*Monographie der Nematoden*) as follows:

Strongylus micrurus, Mehlis.—Male, 35mm (1.4 inches); female, 60mm (2.4 inches) mouth round, without noticeable papillæ; cuticle smooth; vulva 18mm (.7 inch) from caudal extremity. Viviparous. Bursa small, round. Posterior rays three notches of the extremity of the common trunk. Middle rays single. Anterior rays separate. Spicula short and strong, colored deep brown.

A number of lung-worms received recently at the laboratory from the West were measured and of three of the adult males the dimensions were 40mm, 50mm, and 53mm, respectively. This would make the average length at least 45mm (1.8 inches). Two adult females measured 55mm and 65mm, respectively. The width of the body in both sexes was from .4mm to .5mm (.015 to .02 inch); the ova within the uterus, and containing matured embryos, were .08mm long and .05mm wide. (For drawings made from these specimens, see Plate X, with description.)

The *strongyli* removed from the lungs of the calf at the experimental station were found somewhat shorter. Of ten males the average length was about 37mm (1.5 inches); ten females averaged about 47mm in length, or almost 2 inches. The embryos of the lungs measured about .3mm in length (about .012 inch) and .018mm (.0007 inch) in thickness. Those hatched from ripe ova a day later were of the same dimensions. The ova were about .05mm (.002 inch) wide and .09mm (.0036 inch) long.* The adult worms within the bronchi were kept for at least forty-eight hours in the refrigerator at a temperature of 50° to 55° F., and very few manifested any movements. After a few hours' sojourn in a normal salt solution in the incubator at a temperature of 98° to 100° F., most of them exhibited very active movements. A large number of ripe ova were placed in temperatures of about 50°, 65°, and 75° F., respectively; within twenty-four hours very few of the embryos of the first lot had left the shell, while a large number were found hatched and lively in the third lot.

The most common lung-worm of sheep is described by the same author as follows:

Strongylus filaria, R.—Male 25mm (1 inch). Female 70mm (2.75 inches) Mouth round. Head rounded, without noticeable papillæ. Cuticle with numerous longitudinal ridges. Vulva 30mm (1.2 inches) from the caudal extremity. Ovaries symmetrically directed, anteriorly and posteriorly. Uterus filled with free embryos. Bursa long. Three dorsal rays, also shallow notches. Ventral rays separated. Spicula short and very thick, dark brown. (Plate XI, Figs. 5 and 6.)

These two species are very closely related, but are definitely distinguishable by the different situation of the vulva, and the absence of all cuticular ridges in the former.

The œsophagus of *Strongylus filaria* is about 1.5mm (.06 inch) long, with a bulb-like enlargement at its junction with intestine into which its bell-shaped terminal portion projects. The intestine extends as a brownish tube through the entire body. The vulva shows as two projecting lips.

* The discrepancy in length between this and the other lot of ova is explained when we consider that the former were measured fresh.

Very characteristic are the two hollow, dark spicula, about .5mm (.02 inch) long; eggs, oval, .1mm (.004 inch) long, .06 mm (.024 inch) broad. Embryos .5mm (.02 inch) long, and .02mm (.0008 inch) in diameter. Tail slender, slightly curved, pointed. The head has a characteristic cupular projection.

The lung-worm, found frequently in pigs without causing much damage, but also in sheep, where it is said to cause at times severe bronchitis, deserves on this account a passing notice. It is briefly described as follows (*loc. cit.*):

Strongylus paradoxus, Mehlis.—Male 20mm (.79 inch). Female 30mm to 35mm (1.2 inches, to 1.28 inch). Mouth surrounded by six lobes. The two lateral ones largest. Vulva near anus projecting, surrounded by a vesicle or bladder-like body, visible to the naked eye. Caudal end of male, at the base of bursa, curved toward the ventral aspect. Bursa with numerous folds; it cannot be spread without tearing, hence no description possible. (Plate XI, Figs. 1 and 2.)

The male is provided with two very long spicula, measuring 2.5mm (.1 inch) outside of the body. They are hollow, tubular, and neatly marked with transverse bands.

The hair-worm (Plate XI, Figs. 3 and 4) which produces the tubercular nodules on the surface of the lungs in sheep (*Pseudalius ovis pulmonalis*) may be briefly described as cylindrical in shape, 20mm to 30mm (.79 inch to 1.2 inch) long, .05mm to .07mm (.002 inch to .0028 inch) thick, the female being longer than the male. The caudal portion of the body of the male is wound up in close spirals; that of the female is wavy. Mouth corolla-shaped, with four membranous lips. It contains a boring apparatus resembling a fir cone. The caudal end of the male is cleft and provided with two equal, arched, dark-brown spicules. The free end of each is divided into two spines, toothed ventrally. This latter worm may be readily distinguished from the other forms described by its attenuated form, the absence of a distinct bursa and the bifid spicules. *Strongylus paradoxus* is readily singled out by its peculiar bladder-like attachment in the female, and the very long, hooked spicula in the male. The remaining two species (*Strongylus micrurus* and *Strongylus filaria*) are very much alike, but the habitat will serve as a means of distinction, if the microscopical characters cannot be studied.

The complete life history of the various lung-worms is still a matter of speculation among helminthologists. A thorough knowledge of the mode of life of the embryos and larvæ before their final establishment in the trachea of domestic animals would guarantee better means of prevention.

In regard to the *Strongylus filaria* of sheep, Leuckart describes the embryos discharged with the mucus as quite well characterized by a button-like projection at the cephalic extremity They remain alive in moist earth for weeks. They may even dry out and still assume their activity on the addition of water They molt in about two weeks, and die soon after. Lambs fed with molting embryos failed to take the disease. Four sheep fed at different times with bronchial mucus containing numerous embryos, remained well. Leuckart, therefore, concludes that the embryos, after being discharged from the lungs, probably invade some invertebrate, such as insect or snail, and there attain twice their original length before they are capable of becoming matured when taken up by ruminants. He does not share the views of some who maintain that the disease is communicable directly from one animal to another. In other words, the contact of the sick with the healthy is not dangerous.

Most of the authorities of to-day seem to accept this view, and it cer-

tainly has more in its favor than the opposite. A few, especially among the French, adhere to the belief of its communicability.

The life history of these lung-worms may be summarized briefly as follows: The adult sexually mature worms in the trachea and bronchi, or alveoli (*Pseudalius ovis pulmonalis*), produce a large number of ova, which finally set free living embryos. These are discharged with the mucus and probably enter some invertebrate as a mediate host to undergo further development. When taken into the stomach of the final host, through the food and drinking water, they migrate back to the pharynx and thence into the air passages, where they assume the adult form and set up constant irritation leading to bronchitis. Ruminants may be more readily affected in this way, because the food is returned to the mouth and with it any embryos which are thus at liberty to enter the trachea and bronchi through the larynx.

TREATMENT.

Preventive measures.—The most important phase of treatment is undoubtedly the adoption of rules for the prevention of the spread of the disease. These rules will vary according as we believe the disease directly communicable from one animal to another or not. Presumptive evidence leans towards the latter view, but it will be safest to remove the sick from the healthy, if that be possible. This will prevent the contamination of the stables and pastures with the mucous discharges that are known to contain the parasites. The latter, if not immediately dangerous, are potentially so, and when their development is completed the places where the embryos have been deposited may become potent sources of evil. In large herds, where strict attention cannot be given to preventive measures, destruction of the diseased animals and annihilation of the lungs and other diseased organs and products by fire or some chemical agent is without doubt the safest and most profitable course in the end.

On contaminated pastures the parasites are probably taken up in spring and early summer. The disease in lambs may be avoided either by keeping them in the stables or by giving them plenty of water to drink before they are driven to pasture, so that they will not be forced to seek the stagnant pools, the usual abode of parasites. Some food may be given with the water.

It is thought by some that there is much risk in pasturing lambs or calves on old pastures after adult stock, and that it is advisable to keep them on young grasses and on high ground.

Spinola advises, in addition, the use of anthelmintic substances for lambs in spring and early summer which act injuriously on the parasites in the stomach. A favorite formula of his, which has found its way into most veterinary works, is the following:

Wormwood and calamus root, each 2 pounds.
Tansy root, burnt bones (animal charcoal?), each 1 pound.
Sulphate of iron, 3 ounces.
Make into a powder and mix with ground oats as a lick, each lamb to receive about one-half ounce.

Finally, in adopting preventive measures, the destruction of the parasite must be the chief end in view, and while this is being done susceptible animals must be kept away from places where the parasites are supposed to be. With these two rules constantly in mind the disease may be kept in check. All fodder soiled by discharges should be burnt, infected stables carefully cleaned; pastures should be drained to remove all stagnant pools; streams of running water should be kept perfectly pure.

REMEDIES ADMINISTERED INTERNALLY.

The above measures have reference to the safety of uninfected animals. The treatment to be resorted to when the existence of verminous bronchitis has been determined, and it is not desirable to destroy the diseased animals, must be directed, first, towards supporting the strength of the animal, and second, towards the destruction of the parasites.

Good nourishing food is therefore always indicated. A recent writer suggests the use of garlic, which Megnin found so efficacious in the treatment of the gapes. (See First Annual Report of the Bureau of Animal Industry, p. 294.) This should be mixed with the food. Medical treatment has been of various kinds. The internal administration of remedies has been much employed, together with the inhalation of volatile, irritant substances, supposed to have a direct toxic action upon the parasites. Lately, the method of injecting liquids into the trachea has been suggested, and veterinarians are very hopeful of its successful application in the future. First, as regards internal remedies, the following mixture seems to enjoy considerable favor among European veterinarians:

	Grams.
Asafœtida	30
Empyreumatic oil of Chabert	60
Mucilage	500

One teaspoonful daily in milk.

The oil of Chabert, however, is not in the market in this country, making the formula useless. Among other remedies, creosote has been given diluted in water, 63 grams (about 2 ounces by weight) being distributed to 100 sheep. Benzine and picrate of potash are among those recommended. Recently a writer (*Recueil de Méd. Vét.*, 1884, p. 26) reports recovery of 150 cases of verminous bronchitis in calves during a period of three years under the following treatment:

Give, according to size, 10 to 15 centi-grams (1.5 to 2.3 grains) of sulphate of strychnia daily in water. This quantity must be divided into three or four doses, as strychnia is very poisonous. In addition to this, from 10 to 15 grams (2½ to 4 drachms) of sulphide of calcium are given in oats or bran.

To attack the parasites directly in the air-passages inhalations and fumigations have been much resorted to.

The affected animals are placed in a closed building and the medicines vaporized by means of heat. This can be accomplished by pouring them upon heated stones or iron. Crude carbolic acid and tar have been employed in this manner. Certain other recommended substances, among them turpentine and ether, which are inflammable, must be used with care, and ordinarily are converted into vapor without the use of heat. Sulphur may be burned in an iron receptacle. In these fumigations care must be taken that they do not prove too irritating to the air-passages. Several fumigations must usually be practiced to be of any benefit. Strebel recommends a mixture of one part of turpentine and thirty parts of ether, to be dropped into the nostrils of the affected animal. Knowing the irritating effects of ether on the mucous membranes, it is questionable whether such treatment would accomplish anything beyond causing severe coughing.

TRACHEAL INJECTIONS.

Probably the most promising medication which is now being tried is the direct injection into the trachea of liquid medicines known to have

a destructive action upon the parasites. The medicines thus introduced have an opportunity of acting upon the parasites directly before they are all absorbed by the mucous membrane of the air-passages. There is no reason to doubt that they may have even a secondary effect after their absorption if they are naturally thrown off by the mucous membrane of the air-passages and the epithelium of the alveoli, which is the case with most volatile substances.

The method of tracheal injections was first tried by Gohier in the early part of the present century, after learning experimentally that considerable quantities of liquid can be introduced into the trachea without producing suffocation. Delafond some years after conducted some experiments to determine the absorptive power of the air-passages. He found that mucilaginous decoctions, solutions of sugar or honey, are speedily absorbed when injected into the trachea, inducing slight symptoms of suffocation for one or two hours. He also found that solutions of narcotic agents and stimulants manifest their physiological effects very soon after injection, and that oils and oily medicines produce a congestion of the lungs which is but slowly dissipated, and that even very dilute solutions of mineral and vegetable acids produce inflammation, with copious secretion of mucus, giving rise to symptoms of asphyxia and even leading to death.

Dr. Levi, of the University of Pisa, has recently applied this method in the treatment of a number of diseases (*Manuel pratique des injections trachéales dans le cheval*, 1883). His experiments also tended to show that the mucous membrane absorbs very rapidly and is therefore less apt to suffer from the injection of irritating substances than if the absorption were less rapid. He also determined that the injection of small quantities of oily substances is not dangerous, the oil probably being emulsified and absorbed. Finally, there is always a slight reduction in the number of respirations, amounting to about three or four per minute, after the introduction of liquids, even when distilled water only is injected.

Without entering into interesting questions concerning the administration of medicines in this manner in other diseases which are discussed at length in the work mentioned, we find that the author has experimented on but one case of lung-worms to test the efficacy of the method. Others, however, have reported cases in which their success justifies a detailed account of the method for future application.

The instrument to be used is a simple hypodermic syringe (Plate XI, Fig. 7), holding from 1 to 2 fluid drachms. The needle of the syringe must be provided with a removable solid rod or trocar, so as not to become plugged when it is pushed through the skin and walls of the trachea. As the needles are apt to break, a number of them should be kept on hand. After the operation the syringe should be carefully washed in pure water, the piston supplied with a drop of olive oil, and the trocar replaced in the needle.

It is best to disinfect by filling the syringe and needle with a 5 per cent. solution of carbolic acid, or a .1 per cent. solution of mercuric chloride* before washing in pure water. The disinfection, however, is not absolutely necessary in this operation if the syringe and needle be kept thoroughly clean. Fill the syringe and place aside. To introduce the needle, extend the head of the animal so as to fix and make prominent

*The former is prepared by adding 5 parts by weight of pure carbolic acid to 100 parts by weight of pure water previously heated; the latter by adding 1 part of the corrosive sublimate (a violent poison) to 1,000 parts of water.

the trachea, which will be felt as a tense elastic tube along the middle line of the neck. The most convenient point for the introduction of the needle is at about the middle of the length of the neck. It must be remembered that some care is to be observed, as the trachea is in relation with some important structures on either side, the jugular vein, the carotid artery, and the pneumogastric nerve. Having fixed the trachea with the left hand, the needle with the trocar is inserted beneath the skin and then an interannular space is sought so as not to pierce a cartilaginous ring. Or the needle may be pushed directly into the trachea without necessarily avoiding a cartilaginous ring. The unimpeded movement of the free end of the needle as if in an empty space is a sure sign that the needle is in its proper place. The trocar is now removed, the syringe screwed upon the needle and the contents very slowly forced out into the trachea. Before the needle is finally withdrawn, Dr. Levi thinks best to wash it out with some pure water so as to remove the injecting fluid. In withdrawing the needle this might accidentally be discharged in the wound made by the needle and set up inflammation, if the substances introduced be irritating. How this washing-out is to be done he does not state. It seems that a small pipette or medicine-dropper filled with water and inserted into the end of the needle would suffice to wash it out, or drawing back the piston of the syringe would leave the needle comparatively empty. The needle might also be washed out by removing the syringe, washing it out, filling with water, and forcing a few drops into the trachea through this needle. This, however, would cause unnecessary delay before the animal is released, and is, therefore, not to be recommended. The simplest method, then, to empty the needle would be to draw back the piston, for the discharge of anything but the purest water into the wound may produce more irritation than the medicinal substances themselves. The animal should be watched for some time, especially after the first operation, to observe how the injection has been borne, and whether any symptoms arise which indicate difficulty of breathing.

If, as has been suggested, a slight incision be made in the skin before introducing the needle, and if a cartilaginous ring be avoided in piercing the trachea, the ordinary needle with beveled extremity (Plate XI, Fig. 7) will be sufficient, and the trocar may be dispensed with. When the needle has entered the trachea, a slight hissing noise due to the entrance and exit of air with each inspiration and expiration indicates that the needle has reached its destination and is not plugged.

The substances to be injected should have distinctly vermicide properties without being at the same time too irritating or poisonous in their effects on the animal. Levi gives two formulæ which he used with success upon a sheep. The worms were discharged in three days and the catarrh cured.

		By weight.
Iodine	parts..	2
Iodide of potash	do...	10
Distilled water	do...	100

Begin with half a drachm of this solution added to half a drachm of water, and increase by half a drachm of the above solution each day up to 5 drachms. Another remedy is the following: Mix equal parts of turpentine and olive oil, and inject from 1 to 4 drachms. In this case the writer probably intended to state that the dose should be increased from 1 to 4 drachms on successive days.

Eloire (*Recueil de Méd. Vét.* 1883, p. 683) gives the following formula:

Ordinary oil of poppy and oil of turpentine, each	parts..	100
Carbolic acid and purified oil of cade, each	do...	2

The oil of poppy, being a bland oil, does not possess any medicinal properties, and may be replaced by olive oil. Each calf to receive about 2 drachms a day for three days.

Six animals treated in this way showed immediate improvement and were finally cured. Penhale (*Veterinarian*, 1885, p. 106) reports immediate relief and ultimate cure in two calves by injecting the following mixture:

Oil of turpentine	drachms..	2
Carbolic acid	drops..	20
Chloroform	drachm..	½

Hutton (*loc. cit.*, p. 62) reports favorable results in six out of eight cases by injecting the above liquid, in which 1 drachm of the tincture of opium was used in place of the chloroform.

This completes the list of remedies thus far suggested and tried, and the results obtained therefrom. The favorable testimony, though not abundant, is very encouraging. There are many substances, no doubt, the use of which might be more beneficial than those mentioned, but nothing can be said of them until they have been tried.

In this connection a few experiments may be described having for their object the infection of healthy calves with lung-worms and the determination of the effect upon them of intra-tracheal injections.

On October 30 two calves were fed with a large number of strongyli (over a hundred), obtained from the lungs of the calf described in the preceding pages as having been killed at the experimental station in order to determine the presence or absence of lung-worms. Live embryos were present in large numbers in the worms consumed. Worms, which were kept for a few days at a temperature of 70° to 80° F. in water, set free ova which hatched within one or two days. The embryos remained alive about five days, the water being occasionally changed. One of the calves thus fed was reported to cough now and then. This was killed December 17, over a month and a half after feeding. No worms or lesions referable to them were found after a careful search through the whole lung tissue. The other calf remained well.

Tracheal injections were tried upon several calves which had been affected with verminous bronchitis. The injections were made too late, however, and prove simply that injections may be practiced without any fear of untoward results. The worms had probably disappeared before the injections were made. The following is a brief résumé of these trials:

A bull calf received from New Jersey, October 21, 1885, was treated December 18, 1885. The liquid consisted of turpentine 2 drachms, chloroform half drachm, carbolic acid 20 drops, and was injected according to the directions given in the preceding pages. During the operation the animal coughed a few times, but was otherwise not inconvenienced. No after effects observed. Improvement slight. January 6 a second injection was made. The animal coughed frequently and struggled more violently, exhibiting a greater sensitiveness than at the first injection. For a few minutes after the operation symptoms referable to anæsthesia were observed. The animal was killed January 11. The trachea was carefully examined, but no inflammatory reaction noticed. The posterior lobes of the lungs contained hepatized masses evidently caused by lung-worms. There was no trace of the latter excepting a few degenerated ova in the mucus of the bronchi. We concluded from these facts that the worms themselves had disappeared before the last injection.

On another calf received at the experimental station October 27, 1885, an injection was practiced as in the first calf, January 6. It was killed January 9. Near the place of puncture in the trachea several small extravasations were observed. No inflammation produced. Regions of hepatization were present in this lung, but no trace of lung-worms could be discovered.

A third calf, presumably affected with lung-worms, which had been at the station since October 21, was treated January 12, 1886, in the same way. For a few moments anæsthesia was very marked. To avoid any doubt as to the presence or absence of lung-worms in this animal, independent of any effects due to the injection, it was killed on the following day. The thorax contained large quantities of chocolate-colored serum. There were a few small extravasations under the mucous membrane of the trachea near the puncture, and a diffuse reddening of the entire tracheal membrane. In both lungs the anterior lobes were completely hepatized and full of serum, which flowed abundantly on section. The bronchi in these lobes were occluded by plugs of very thick, whitish mucus. Other regions of localized hepatization pointed to lung-worms as a cause. These, however, were the result of some severe broncho-pneumonia, probably not due to the injection, for they seemed to be lesions of more advanced age. No lung-worms were present.

In these three animals the lung-worms must have disappeared before the injections were made, and therefore the experiments fail to give any information as the effect of such injections on lung-worms. They confirm the facts already pointed out in in the preceding pages that injections may be borne by the bronchial mucous membrane without producing any marked disturbances.

Marx. from Nature

Julius Bien & Co. Lith.

VERMINOUS BRONCHITIS

Fig.1.

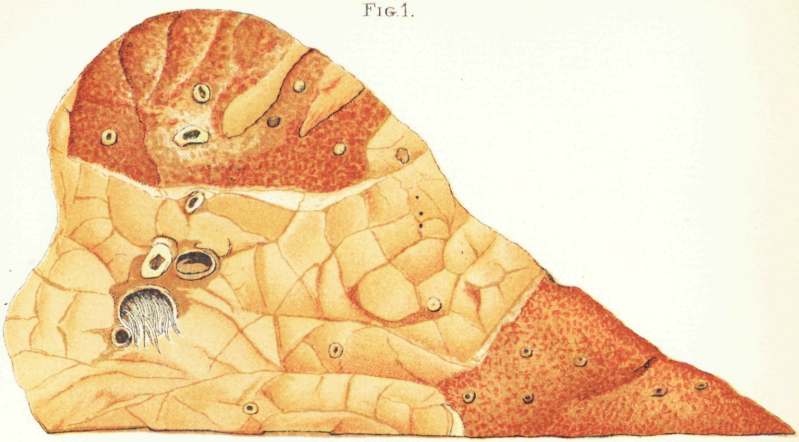
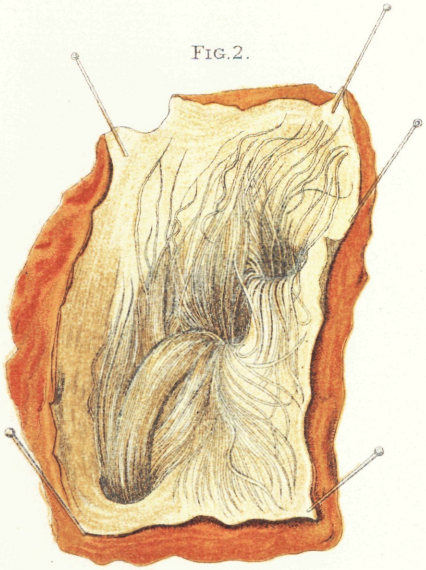


Fig.2.



Marx from Nature

Julius Bien & Co Lith.

VERMINOUS BRONCHITIS.

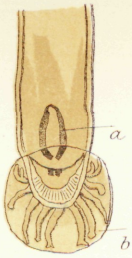


Fig. 3.

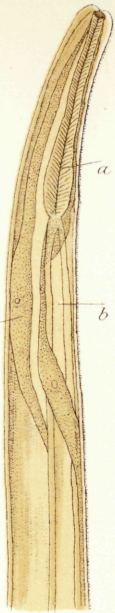


Fig. 4.

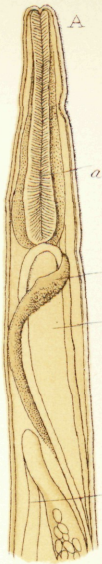


Fig. 1.

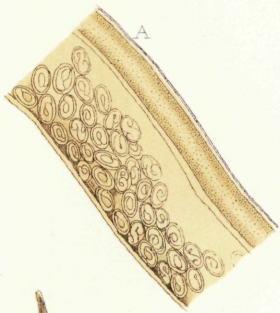


Fig. 5.

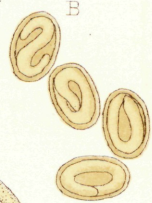


Fig. 6.

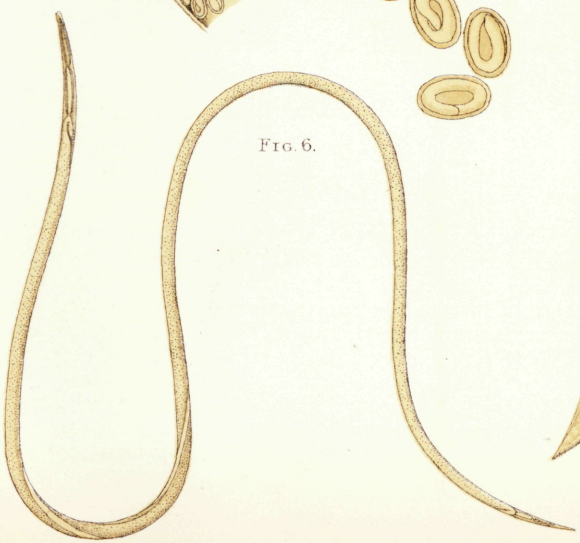
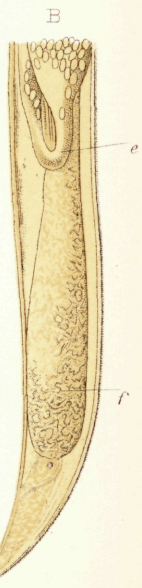


Fig. 4.



Marx, from Nature

Julius Bien & Co Lith.

STRONGYLUS MICRURUS.

(Verminous Bronchitis.)

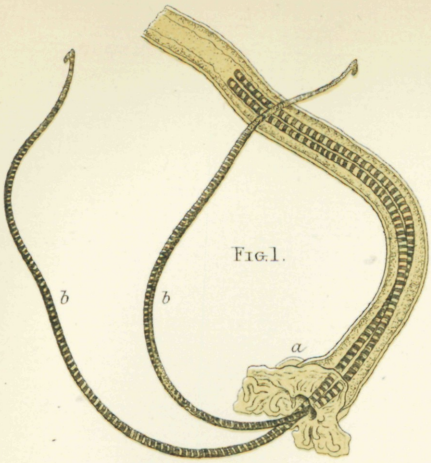


Fig. 1.

Fig. 2.

Fig. 7.

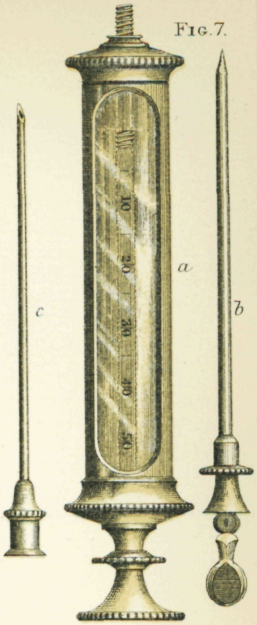


Fig. 4.

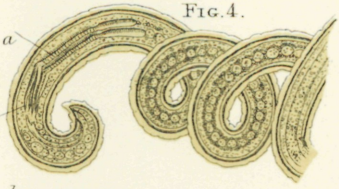


Fig. 3.

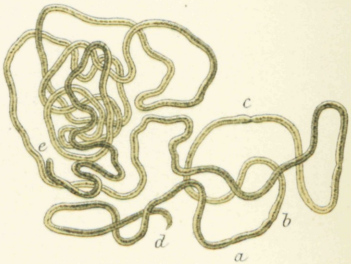


Fig. 6.

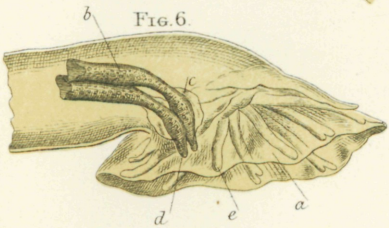


Fig. 5.

Marx. from Nature

Julius Bien & Co Lith.

VERMINOUS BRONCHITIS.

DESCRIPTION OF PLATES.

TO ILLUSTRATE VERMINOUS BRONCHITIS.

PLATE VIII.—Left lung of a calf affected with verminous bronchitis. Lateral aspect. The greater part of the surface has a normal appearance excepting the islands representing hepatized tissue. The pleura over the posterior half is more or less opaque. Clouded (x ⅔).

PLATE IX, FIG. 1.—Trans-section of the left lung represented on preceding plate. A considerable portion of the lung tissue is hepatized. Towards the left a bronchus is seen in section, filled with strongyli (x ⅔).

FIG. 2.—A large bronchus from the same lung, slit open and showing the openings of three smaller bronchi. Bundles of worms projecting therefrom.

PLATE X, FIG. 1.—*Strongylus micrurus*, about natural size. *A*, male; *B*, female.

FIG. 2.—Caudal extremity of the male, showing the bursa *b*, supported by twelve rays, from two different aspects, *a* the two short spicula (x 50).

FIG. 3.—Anterior extremity of the male, showing the mouth and œsophagus *a* leading into the intestine *b*. The two unicellular glands of the neck are shown with their enlargement *c* containing a minute nucleus (x 40).

FIG. 4.—*A*, anterior extremity of a female; *a*, *b*, *c*, as in Figure 3; at *d* the oviduct is bent upon itself and continued into the uterus which contains some ova. *B*, posterior extremity showing at *e* the flexure of the oviduct and entrance into uterus filled with ova; *f*, the enlarged posterior portion of the intestine (x 50).

FIG. 5.—*A*, portion of the body of a female near the middle of the body with ova containing fully developed embryos (x 40). *B*, the ova with the embryos occupying different positions (x 120).

FIG. 6.—An adult female filled with ova (x 4).

PLATE XI,* FIG. 1.—*Strongylus paradoxus*, caudal extremity of the male showing *a*, the bursa; *b b*, the spicula, hooked at the free extremity.

FIG. 2.—Caudal extremity of female with pear-shaped vesicle *a*.

FIG. 3.—*Pseudalius ovis pulmonalis*, female; *a*, *b*, *c*, constrictions; *d*, caudal extremity; *e*, mouth (x 50).

FIG. 4.—Caudal extremity of the male (x 800); *a*, spicula forked at *b*.

FIG. 5.—*Strongylus filaria*, female; *a*, mouth; *b*, funnel-shaped insertion of œsophagus into intestine; *c c*, intestine; *d*, caudal extremity; *e*, vulva; *f f*, uterus.

FIG. 6.—Caudal extremity of male; *a*, bursa; *b*, spicula; *c*, flap-like attachment, and *d*, conical, blunt extremity of the same; *e e*, rays of the bursa.

FIG. 7.—Syringe used for tracheal injections; *a*, syringe with glass barrel and graduated piston-rod; *b*, hollow needle with trocar; *d*, needle with beveled extremity without trocar.

* Figs. 1 to 6 inclusive are taken from A. Koch's *Die Nematoden der Schaflunge*.

UNITED STATES NEAT CATTLE QUARANTINE.

The superintendents of the various neat cattle quarantine stations report the names of the importers, and the number and breed of each lot of animals imported during the year 1885, as follows:

WALTHAM AND LITTLETON STATIONS, MASS.

DR. J. R. MCLAUGHLIN, SUPERINTENDENT.

Date of arrival.	Name and post-office address of importer.	Port of shipment.	Name of breed.	Number of animals.
1885.				
Feb. 16	Thos. B. Wales, jr., Iowa City, Iowa	Liverpool	Holstein	9
Mar. 27	J. J. Hill, Saint Paul, Minn	do	Durham and Angus.	127
Apr. 1	S. F. Perry, Lenox, Mass	London	Holstein	40
May 1	Everett Smith, Waltham, Mass	do	do	13
19	T. B. Wales, jr., Iowa City, Iowa	do	do	30
28	H. W. Hockema, Washington, Minn	Antwerp	do	8
29	F. Codman, Brookline, Mass	Liverpool	Guernsey	6
June 2	T. F. Koch, Chicago, Ill	Amsterdam	Holstein	58
Aug. 26	W. L. Archibald, Oxford, Miss	London	do	199
Sept. 9	James L. Flint, New York City	Glasgow	Polled Angus	3
Oct. 16	William A. Russell, Lawrence, Mass	London	Holstein	82
Nov. 13	James Cunningham & Son, Dalbeattia, Scotland	Glasgow	Galloway	200

GARFIELD STATION, N. J., NEAR NEW YORK.

DR. A. M. FARRINGTON, SUPERINTENDENT.

1885.				
Jan. 2	S. P. Dyt, Passaic, N. J	Antwerp	Holstein	50
19	Hyltje Bakker, West Chester, Pa	do	do	15
26	John A. Desseaux, Isle of Jersey	London	Jersey	20
Mar. 7	Guthrie, Bell & Co., Shelbyville, Ky	do	Holstein	60
Apr. 6	D. H. Archibald, Oxford, Miss	Amsterdam	do	28
May 7	E. Huidekoper, Meadville, Pa	do	do	1
7	J. H. Maginnis, New Orleans, La	London	Jersey	2
7	F. B. Savage, Newburg, N. Y	do	Holstein	10
7	Guthrie, Bell & Co., Shelbyville, Ky	Amsterdam	do	59
7	French Brothers, Cincinnati, Ohio	London	do	82
June 1	Edward Kemp, Fair Haven, N. J	Antwerp	do	11
1	B. B. Lord & Son, Sinclairville, N. Y	do	do	69
4	Hyltje Bakker, West Chester, Pa	do	do	20
4	William A. Singerly, North Wales, Pa	do	do	20
22	Sluiter Brothers, Brooklyn, N. Y	Amsterdam	do	85
July 1	J. L. Gardiner, Springs, N. Y	London	Guernsey	6
1	J. C. Duncan, Normal, Ill	France	Normandie	2
Aug. 14	E. Smith Jameson, Mount Sterling, Ky	London	Red Polled	8
18	A. Oltmans, Ridott, Ill	Hamburg	Ost. Friesian	26
25	James Oliver, South Bend, Ind	Glasgow	Ayershire	9
31	W. H. Goodpasture, Nashville, Tenn	London	Holstein	50
31	Wm. M. Singerly, North Wales, Pa	do	do	20
Sept. 5	T. S. Cooper, Coopersburg, Pa	do	Jersey	7
5	George V. Forman, Olean, N. Y	do	do	16
19	S. P. Dyt, Passaic, N. J	do	Holstein	10
19	James F. Sutton, Bedford, N. Y	Amsterdam	do	21
Oct. 5	Hyltje Bakker, West Chester, Pa	Antwerp	do	30
5	J. Kellenberger, Centreville, Va	London	Swiss	5
26	W. H. Johnson, Centre Rutland, Vt	do	Jersey	19
29	A. Sutherland, Denver, Colo	Antwerp	Holstein	26
Nov. 7	Bastian Diebel, Garfield, N. J	Amsterdam	do	20
Dec. 10	J. H. Offord, Topeka, Kans	London	Red Polled	20

COOPERSBURG AND CHESTER STATIONS, PENNSYLVANIA.

DR. FRANCIS BRIDGE, SUPERINTENDENT.

Date of arrival.	Name and post-office address of importer.	Port of shipment.	Name of breed.	Number of animals.
1885.				
Jan. 7	A. M. Harkness, Philadelphia, Pa	Liverpool	Jersey	30
Feb. 17	T. S. Cooper, Coopersburg, Pa	Southampton	do	36

PATAPSCO STATION, NEAR BALTIMORE, MD.

DR. A. H. ROSE, SUPERINTENDENT.

1885.				
Jan. 11	H. R. Tucker & Co., Baltimore, Md	Liverpool	Jersey	40
Feb. 11	William Miller, Coteau Landing, Canada	do	Hereford, Angus, and Galloway.	60
Apr. 11	Samuel C. Kent, West Grove, Pa	do	Guernsey	42
Aug. 19	Charles C. Lening, Philadelphia, Pa	Bremen	Holstein	7
Sept. 26	Edward Paul, Heron Lake, Minn	Liverpool	Galloway	22

SAN FRANCISCO STATION, CALIFORNIA.

DR. A. DE TAVEL, SUPERINTENDENT.

1885.				
Feb. 10	J. D. Spreckles, San Francisco, Cal	Honolulu	Hereford	41
Sept. 1	J. W. Brown, San Francisco, Cal	do	Polled Angus	24
Dec. 2	Hugh Craig, San Francisco, Cal	Auckland	Hereford	15

Whole number of cattle received at the various stations from January 1, 1885, to January 1, 1886:

Waltham and Littleton Stations	775
Garfield Station	827
Coopersburg and Chester Stations	66
Patapsco Station	171
San Francisco Station	80
Total	1,919

Table showing the number of cattle received at the various quarantine stations of the United States for each month of the year.

Month.	Waltham, Mass.	Garfield, N. J.	Chester, Pa.	Patapsco, Md.	San Francisco, Cal.	Total.
January		85	30	40		155
February	9		36	60	41	146
March	127	60				187
April	40	28		42		110
May	57	154				211
June	58	205				263
July		8				8
August	199	113		7		319
September	3	54		22	24	103
October	82	80				162
November	200	20				220
December		20			15	35
Total	775	827	66	171	80	1,919

Table showing the different breeds of cattle and the number of each imported during the year.

Breed.	Number.	Breed.	Number.
Holstein	1,133	Ost Friesian	26
Galloway	236	Ayrshires	9
Jersey	170	Swiss	5
Angus	142	Normandie	2
Hereford	98		
Guernsey	54	Total	1,919
Durham	44		

The stations at Portland, Me., Coopersburg and Chester, Pa., and New Orleans, La., were abolished on the 1st day of July last. No cattle arrived at Portland after the station was transferred to the control of the Commissioner of Agriculture. The station at Waltham has been removed to Littleton, Mass.

No contagious disease appeared among the animals at any of the stations during the year, and the general health of all the cattle imported was good.

Respectfully submmitted,

D. E. SALMON, D. V. M.,
Chief of Bureau of Animal Industry.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture.

IMPORTANCE OF THE RANGE INDUSTRY.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture:

SIR: I have the honor to submit herewith my report as one of the agents of the United States Bureau of Animal Industry As I was specially assigned to duty in the range country, I have confined my work to the range interests. While engaged in the preparation of my reports I have tried to serve the live-stock industry by aiding State and Territorial sanitary authorities in the enforcement of quarantine regulations against diseased cattle. I have also done all that I could to promote inter-State commerce in healthy cattle and prevent rival interests from shutting out healthy competition on pretext of disease.

Believing that the prosperity of the live-stock industry of the range country was largely dependent on the efficiency of our range live-stock associations, I have endeavored to build up these associations by every means in my power.

Realizing the inefficiency of correspondence, especially with range cattlemen, as a means of obtaining desired information, I have traveled almost constantly over the range country, from Texas to Montana, during my connection with the Bureau, and as I have personally conferred with the major portion of the prominent range cattlemen, you may rely on the reports herewith submitted as reflecting the advanced thought of those who are most deeply interested in the success of the work of the Bureau.

The cattle industry of the great West represents in its annual results nearly 2,000,000 beef steers added to the food supply of the world. It is true that quite a large per cent. of these (15 to 25) are sent to the corn belts of the old West and ripened, but the carcasses are grown on the plains. This is about one-third of the annual beef supply of the whole United States, and if cut off would create a beef famine in the land. Under these circumstances, how important is it that the West be encouraged in the direction of continual production. With this great beef reserve to draw from, the working classes of the East are to-day scarcely able to buy adequate supplies. Without this resource, prices would advance to such an extent that only the rich could eat beef at all.

The Bureau of Animal Industry has been called into existence by a popular demand from all over the stock-growing regions of the United States, and to its agents opens up a vast field for practical effort, in assisting to build up the live-stock interests of the country. Under modern civilization, one of the chief aims of Government should be a continuous effort to foster and encourage all possible means for securing cheap and abundant food supplies for the masses of the people. Hence every agent under this Bureau should feel that his time is to be devoted to the labor of securing practical beneficial results, as well as in making scientific investigations, with relation to the industry.

Therefore I have arranged the following thoughts and statements of fact under separate heads, so as to give a correct idea of the great industry to those in the East who are not familiar with the subject, and at the same time present matter for the careful study and investigation of those in the West who are practically engaged in stock-raising.

THE ARID REGIONS—THE PERMANENT RANGE.

Just at this time a good deal of discussion is going on in the Eastern press relative to the range country, and a vast amount of ignorance is being displayed by those engaged in discussing the subject.

The permanent cattle ranges of the West are the arid regions. Large areas on the edges of these regions have been utilized as ranges in the past, but the farmer with his plow has now taken possession of such places, and the herds are virtually driven to the bad lands and sections where agriculture is impossible without irrigation. This movement is strictly in harmony with the laws of nature. Every district of country in the United States that is susceptible to cultivation, and that without artificial water supplies, will respond to the touch of the husbandman, is the legitimate inheritance of the farmer, and will sooner or later fall in his hands. Such lands are not suited to range purposes, for the reason that whenever the natural rainfall is sufficient and frequent enough to produce a grain crop, the grasses remain green and full of sap until the frost kills them. With the coming of frost goes all the nutriment of the grasses not matured, and the woody fiber remaining will not support animal life. Thus, the simple fact that any given region affords a cured and nutritious grass for winter feeding is proof positive that it is not adapted to agriculture, and that the ordinary farmer would only fail if he attempted to live by the plow. There are millions of acres of this arid region only suited for grazing fields, and in the future legislation touching the public domain, the leading idea to be kept in view is this one question of properly separating the arid regions from the agricultural. With rare exceptions the talk about herd owners "bull-dozing" and driving out would-be settlers and farmers is pure fiction. For the reason above set forth, the farmer who would attempt to settle and make a farm on any cattle range in the arid regions would be deemed a lunatic by all well-informed persons. With more light on Western range subjects, and especially more information as to the character of the lands occupied by the roving herds, a wonderful change would come over the minds of the Eastern people. There is really no antagonism between the grazing and farming interests of the West, because there cannot be, according to the nature of the country, any conflict. Nature has drawn the lines of demarkation, and until that same nature overrides her own laws there can be none.

SOUTHERN BREEDING GROUNDS AND NORTHERN MATURING FIELDS.

The Providence that directed the formation of the grassy regions of the Great West so shaped the characteristics of His creation as to adapt them to the future uses of man to the fullest extent. Climatic and productive conditions, though differing as widely as the antipodes, are all in harmony with the uses for which they were originally intended. The sunny slopes and verdant vales of the South are the natural breeding-grounds for the bovine race, and there the largest known per cent. of offspring is secured among the herds. The per cent. of increase varies, of course, in the different herds, because of differences in the

manner of handling them. Charles Goodnight, for instance, at the Pala Duro ranch, on Red River, in Texas, has, for a number of years, branded over 90 per cent. of calves. Other ranchmen get from 80 to 90 per cent. of calves in the Southern country. Experience in the Southwest shows that under proper management, an abundance of males, plenty of water, the range not crowded, and few steers in the herd, 90 to 95 per cent. of calves may be raised. On the other hand, there is less tendency to put on flesh than in the more northern country. While the grasses are abundant and possessed of sufficient nutritive qualities to build muscle and bone and give the animals a round and shapely appearance, they have not sugar and starch enough to lay on fat rapidly. They remain green and in a growing condition too great a portion of the time. So that if an animal gets fat it is of that soft nature which will not stand rough usage or long transportation.

There are some exceptions to this rule, because the range country is, in the language of the cattlemen, "spotted."

But speaking in general terms, the above statement is correct. The reverse of this is true in the North country. The climate is cold and severe. Changes are sudden and extremes great. As a breeding country it has not so far in its history proven a success. There are some small valleys in the mountainous districts, where ranchmen have been able to give proper care to their herds, that have shown good results in this direction. But the great open plains where the larger per cent. of the cattle range both in summer and winter, and the country that will ever remain the grazing fields of the West, is not a profitable breeding region. The average calf crop for a series of years is not over 45 per cent. With uniform and proper methods of handling, including the removal of bulls from the herds during the winter and spring months, this per cent. might be increased. This, however, is not likely to occur, for the reason that the open plains reach virtually from Montana to Texas, and cattle drift by the thousands across State and Territorial lines, and out from under the control of any State or Territorial laws that might be made to govern the matter.

To amend for this short-coming in increase, nature has fully compensated. Conditions exactly the reverse of those named as existing in the Southwest are here found. The grasses start early in the spring, grow rapidly for a few months, and then cure brown and hard. Weeks and months of dry weather drive the juices from the grass, leaving the sugar, starch, and albumen crystallized in stem and blade, so that it is almost impervious to the action of water or the elements. With the shooting of the grass in spring, the cattle begin to thrive, and by the time they have shed their winter coats and rounded into handsome form, the washy nature of the grass has changed to that above described. The system has been made over, so to speak, and is now ready to take on fat. The matured and concentrated grass is like oil-cake in its nature, and lays on tallow almost as rapidly. Cattle not only fatten very fast, but the flesh is hard and firm. In harmony with nature's laws they are preparing for the cold winter by gaining a supply of tallow to keep up the animal heat. The shrewd operators of the North have for years been buying young Southern steers, and placing them on their ranges to mature and prepare for the Eastern markets. Experience has demonstrated that a Texas two-year-old placed on a Montana range and double wintered will weigh 200 pounds more than if left on its native range for the same length of time. This being true, it gives a wide and hopeful margin for transactions in healthy, young Southern cattle.

The increased weight in these steers adds so large a per cent. to the market value, that with reasonable prices in the South there is, in the opinion of most ranchmen, as large a profit and a surer return in maturing cattle than in breeding them. The Southern or breeding country can profitably turn off to the Northern ranchmen three or four hundred thousand head of two-year-olds annually, and the North can mature them. Hence the great importance of a mutual and satisfactory understanding between Northern and Southern sections of the range country.

GRADING UP THE HERDS.

A very large per cent. of the cattle on the Northern ranges have been graded up from Texas cows. In 1881 there was a large drive from Oregon and Washington Territory, and since that time a good many young cattle and some cows have been shipped in from Iowa, Minnesota, Missouri, and a few other States. These "pilgrim" cattle from the East have not shown as ready an adaptation to range life as the Western and Texas imports, and the tendency is rather to discourage the traffic in them. Raised on the pitchfork, so to speak, they know nothing of self-dependence, and when the winter storm strikes them they naturally look for man's help and fail to "rustle" for themselves. On the contrary, the Western and Southern cattle for generations have had to make their own provision for winter, and they are always found hunting for something to eat. But the Southern cattle are light in weight, and as increased weight means increased profits, Northern ranchmen have for years been buying high-grade bulls from the East and grading up their herds. The native cattle to-day, on most Northern ranges, are as good, or perhaps a little better, than half-breeds. Shorthorns and Herefords are, as a rule, the improved breeds used, and our three and four year old steers weigh from eleven hundred to thirteen hundred pounds in the Chicago markets. This makes a very profitable animal, when the markets are not broken by too large receipts; and the question is being generally discussed among ranchmen as to whether the herds are not sufficiently graded up to be safe and profitable. A few herd owners claim that a thoroughbred animal will sustain as much hardship and do as much "rustling" for food as the scrub or grade.

But the general opinion is that the "rustling" qualities belong to the scrub, and that grading up means a larger carcass at the expense of the ability to endure the necessary hardships of our Northern winters. The practical point to determine is how high can we grade without losing the self-sustaining qualities? Large, well-shaped, and weighty cattle are desirable, but if the mortality is increased beyond the gain in size, the improvement is a mistake. Sufficient experiment has not yet been made to definitely determine this point. Present information leads to the opinion that in time there will be established a fixed type of range cattle, something better than a half-breed Shorthorn or Hereford, but developed by a blending of the best suited beef breeds. The Swiss cattle have been produced in this way, and they are a very good "all purpose animal." No particular strain of blood can be traced in them, yet they are uniform in characteristics. Range animals, built up after a good model, and uniform in size, containing all the improved blood, consistent with a retention of the "rustling" qualities, would have a tendency to create a more uniform market. At present the periodical breaks in the beef market are caused by the sending in of unripe animals or those that are ill-shaped, in undue proportion. Uniformity in size and appearance will do much to maintain evenness in market

values. There is room for marked improvements in many ways touching range management, but perhaps the most important is the one above named, of securing the best animal and then ascertaining how to hold on to the proper type.

NORTHERN TRAIL.

I have received assurances from prominent Texas cattlemen that Texas will arrange within her own territory for a right of way or trail to her northern border. This will give her cattle an outlet to the neutral strip belonging to the Government, situated between the Panhandle of Texas and the States of Colorado and Kansas. As the administration has taken strong and positive ground in favor of the right of way for Southern herds through the Indian Territory and neutral strip, it will be seen that an outlet for Southern cattle is at the present time secured to the southern line of Colorado and Kansas. The quarantine regulations of the State of Colorado permit the admission within her borders of all cattle that may receive a bill of health from the State sanitary board. As this board has decided to admit all healthy cattle from Texas that have been driven all the way from their native ranges, the question as to a Northern outlet for Southern cattle is practically settled.

In order, however, to avoid friction, and to accomplish the greatest good to the greatest number with the least possible hardship, I would suggest that the Government withdraw from market the public land along and within the line of Eastern Colorado to the extent of a strip 3 miles wide, and extending from the south line of Colorado to the Arkansas River, the distance being but 75 miles, and the amount of territory embraced being but two hundred and twenty-five sections, or 144,000 acres. When we reflect on the millions of acres that have been given outright to corporations, this request upon the part of so vast an interest as the great western cattle industry, is, by comparison, certainly modest and reasonable. The request appeals for favorable consideration on the further ground that title to the territory is not asked for, but the mere right of way during a short season of the year in the interest of inter-State commerce in healthy cattle for the benefit, not only of the stock-growers, but the entire people of the United States. The drovers have already secured by the actual purchase of land in Colorado on both sides of the Arkansas River at the eastern State line, a right-of-way over that stream. I am assured by the gentlemen who have invested their money in this right of way that they will make it free to the owners of all healthy cattle who may desire to use it, in moving their herds to northern ranges. The cattlemen interested in moving their herds from southern breeding grounds to northern maturing ranges, will cheerfully purchase at full value water privileges along this proposed route from individual owners, which will prevent any injustice being done. The Las Animas County, Colorado, Cattle Growers' Association, whose ranges lie adjoining the neutral strip on the south and extend to the Kansas line on the east, took action the past season in favor of laying out a trail 3 miles wide along the east line of their county, which covers 44 miles, or more than half the distance from the southern boundary of the State to the Arkansas River.

I had a conference in Denver, Colo., recently with quite a number of representative Colorado cattlemen, and also with members of the executive committee of the Colorado Cattle Growers' Association, and they assured me that they desired a trail laid out along the line stated. This is a matter of great importance to Colorado, for the

reason that the country north of the Arkansas River is best adapted for the maturing of steers, of which thousands are annually purchased in the South to fill up the ranges depleted by the annual sale of beeves. The cattle industry of New Mexico, Arizona, Texas, and the Indian Territory will be greatly promoted by the maintenance of a right of way or trail over the route named, for the reason that the greatest profit to be realized from their investments in cattle depends on the success of the yearly movement of their young steers to the maturing ranges of the North; and the ranch owners of the North, who are finding their greatest profit in the maturing of southern steers, are also interested in the success of this important matter. The price of beef is so largely dependent on the product of our western ranges that every man, woman, and child in the United States is interested in fostering this great industry, and in seeing that all reasonable aid is extended to it by the General Government. The strip of country along the Colorado east line is devoid of settlements, and is in the arid regions, where farming cannot be successfully conducted without irrigation, and irrigation could not be employed at any point along this proposed line except where it is crossed by the Arkansas River, where right of way has already been secured. The grasses along this route are excellent in summer, and are much more abundant than the grasses nearer the mountains. As a winter range this section is more dangerous than the ranges further west, because of the absence of shelter, and in consequence is practically unoccupied.

The interests of the great breeding sections of Southern Colorado, New Mexico, Arizona, and Texas are mutual, for the reason that prices of young cattle vary according to grade. Cattle from the northern breeding sections are higher graded than those from the southern districts, which enables equal profits to be made by purchasers of young steers from all sections at proportionate prices based on values, determined by grades. For these reasons there is no competition between the sections named, and they unite in desiring measures that will prove of equal benefit to them all. The trail from the Southern Colorado line north would be a non-infected trail on which native cattle from the non-infected districts could be moved with perfect safety. The southern end of the trail in Texas would be dangerous, but as I have shown in my statements relating to splenic fever, cattle that have been removed from the infected region a sufficient time to purge themselves of the contents of their stomachs, free themselves from infection and are no longer dangerous. The railroads having southern connections in the non-infected districts would be largely benefited by the opening up of the trail indicated, for the reason that it is reasonable to presume that they would secure a satisfactory portion of the cattle seeking outlet north, which they would ship from southern points, and unload where the railroads crossed the line of the trail. The northern railroads interested in the movement of beeves to eastern markets would secure four times the present amount of business if the movement of young steers from southern to northern ranges was properly fostered. With the northern ranges stocked with mixed herds of cattle, not over a sixteenth of the number will ever be marketed for beef within a given year, for the reason that mixed herds on the favored southern ranges, where every cow is supposed to raise a calf, represent cows, calves, yearlings, and two-year-olds in about equal numbers, and the offspring being equally divided as to sex, but one-eighth of the entire herd go to make up the yearly beef products. The increase on northern ranges being one-half less makes the available beef product but one-sixteenth of the mixed herd in each year.

The amount of grass and range necessary to sustain 4 head of mixed cattle will certainly sustain 2 steers, and if a range is stocked with steers instead of mixed cattle, the entire crop of aged steers is sold every year, and replaced by yearly purchases of young animals. As before stated, if the northern ranges which are best adapted by nature for steer ranges were utilized for that purpose, the annual beef product moved to markets of slaughter would be fully four times greater than at present. In addition to the advantages to be derived from transportation companies, the cattlemen can rely on realizing, at a low estimate, over $10 a head over and above all expenses by maturing their steers on the northern ranges, over what they would receive were the steers matured on the southern ranges. The *Chicago Drovers' Journal* a few weeks since mentioned a sale by J. L. Driskill of a lot of beeves marketed from his Dakota range, which weighed over 1,250 pounds each in Chicago, and brought 5 cents a pound, realizing $62.50 each, which would net, after deducting $7.50 for freight, feed, and commissions, $55 per head, which is over $20 per head more than these cattle would have netted if they had been matured on their home range on the Cimarron in the Indian Territory. Mr. F. B. Ernest, of Denver, Colo., who is one of the wealthiest and most successful cattle raisers in the West, told me a few days ago that at the time Driskill moved these cattle north to Dakota he (Ernest) bought a cut-off from the same herd, representing an average of the cattle, and that the cattle which Driskill took to Dakota and marketed from there weighed about 170 pounds more than the cut-off matured by him near Deer Trail, Colo. "Doc" Day, one of the pioneer Texas drovers, and one of the largest cattle owners in Texas and the Indian Territory, told me a few days ago at Kiowa, Ind. T., that he had sold Driskill part of these cattle, and that they were from the Indian Territory, and from Brown and Colman Counties, Texas. I could multiply examples to demonstrate the general truth of the statement that the northern country is naturally best adapted to the maturing of steers, and the southern country to breeding them. This being true, it becomes of national importance that an outlet or right of way be secured which will permit of this yearly movement being continued. The prices realized the present season from the sale of beeves in the great markets of Chicago, Saint Louis, and Kansas City show that while prices of beef were depressed in sympathy with the general depression of values, at the same time heavy, smooth beeves always commanded ready sale at good prices, as indicated by the Driskill sale referred to. The unripe and immature cattle that have been thrown on the beef market this season, especially from the breeding sections of the country, have realized ruinously low prices, which were not satisfactory either to sellers or buyers. Millions of dollars are annually lost to the country by reason of the marketing of unripe cattle, and this is a loss without any corresponding gain to the beef consumers of the nation.

The country for an unknown distance in the British possessions on the east side of the Rocky Mountains, north of Montana, is admirably adapted for the maturing of steers, and there is room in the North for the young steers of the South to be annually taken and matured. The losses of aged steers on average Montana ranges last winter were merely nominal, and the average losses of aged steers on all northern ranges contiguous to the mountains on the east slope are far less than the average losses in the favored State of Texas. This is to be accounted for in a great measure by the dryness of the climate, as it is a well-known fact that dry cold is not as injurious to animal life as the damp, chilly sleets of more southern regions.

I was in Montana up to the middle of last December, and the weather was delightful, scarcely any snow, and during the middle of the day hardly cold enough to wear an overcoat. In the Valley of the Yellowstone, winter practically ends in February, and I can safely say that from the middle of December to the middle of March, a period of about three months, limits the season during which extreme cold weather is to be experienced. This is to be attributed in a measure to the influence of the "Chinook" winds, which blow from the Pacific coast, with a temperature of 86 degrees. The altitude of Miles City, Mont., is 2,300 feet, and the average altitude of Montana is 2,600 feet lower than the average altitude of Wyoming, Colorado, and New Mexico, tending to moderate climatic influences. At times the thermometer ranges, for short periods, 40 to 50 degrees below zero, and at these times the pregnant cows and young calves are liable to perish, while steers two years old and upward, that are in good flesh, experience but little suffering and no loss by death. The consideration of these important truths has a direct bearing upon the question of a northern trail, which is necessary in order to obtain the greatest possible results from our range industry.

To show the national importance of maintaining an outlet to northern ranges for the young cattle from the South, I attach hereto a statement kindly furnished me by Col. R. G. Head, manager of the Prairie Cattle Company, showing the total drive of Texas cattle north for a period of twenty years. It will be seen from this that the average annual drive north, for the period stated, amounts to over 290,000 head. A review of this statistical calculation of the drive of Texas cattle will furnish an idea of the vast importance of that one State in the production of cattle, and from which has been supplied and grown up all the large ranches throughout the western range country. It is well known that less than twenty years ago the territory now comprised in Colorado, Kansas, Nebraska, Wyoming, Dakota, and Montana, was traversed by countless thousands of buffalo. They ranged from the South to the North with each return of spring time, and by that unerring instinct which led them where nature best supplied their wants, pointed with prophetic finger the way for the herds of man, which are not unlike in some respects to the buffalo, and it can safely be assumed that where buffalo grew largest there also will our range cattle attain the largest growth.

These Texas cattle having been bred and reared from time immemorial on the open plains of the South, relying on their own courage and industry for a livelihood, are worthy and well adapted to the rich heritage of the buffalo, which, like the Indian, disappeared before the onward march of civilization.

The Texas cattle drive.

Year.	No. of cattle.	Year.	No. of cattle.
1866	260, 000	1877	201, 000
1867	35, 000	1878	265, 649
1868	75, 000	1879	257, 927
1869	350, 000	1880	394, 784
1870	350, 000	1881	250, 000
1871	600, 000	1882	250, 000
1872	350, 000	1883	265, 000
1873	404, 000	1884	416, 000
1874	166, 000	1885	350, 000
1875	151, 618		
1876	321, 998	Total	5, 813, 976

TRANSPORTATION OF CATTLE FROM TEXAS TO NORTHERN RANGES.

The importance of placing southern cattle upon the northern ranges as early in the season as possible, in order that they may be in condition to stand the northern winters, has furnished the great impetus to the movement of cattle by rail. When we take into consideration the fact that the rail animals reach their destination in much better condition than those driven, it is not difficult to understand the great favor with which the transportation of cattle by rail has been received by stockmen generally. The outbreaks of splenic fever at several northern points last season have undoubtedly been due to cattle brought into several localities by rail; for example, at La Junta and Pueblo, Colo., and the points on the Union Pacific Railroad in Nebraska. This introduction of splenic fever by rail cattle has resulted in a good deal of criticism, adverse to the movement of cattle by rail. There is the same problem to be solved in connection with the movement of cattle by rail that presents itself in connection with any movement of cattle from districts permanently infected with the germs of splenic fever, namely—How to move them without communicating the infection to susceptible cattle? Without a single exception, so far as I am informed, the railroads handling this class of cattle have done all in their power to prevent the spread of the disease, in some cases adopting measures which amounted to a partial suspension of the traffic until after frost.

The following correspondence will explain itself, and will show the spirit which has actuated the railroads in this matter:

TOPEKA, KANS., *August* 1, 1884.

Being requested by representatives of various railroad companies to make such suggestions, as in our opinion, would tend to prevent the spread of any contagious disease among cattle carried by them, we, the agents of the Bureau of Animal Industry, appointed by the Commissioner of Agriculture, respectfully recommend to all railroad companies engaged in the transportation of live stock that all cattle cars used in such transportation be thoroughly cleansed and washed immediately after the unloading of stock; and, further, that any cars that may have been used in the through shipment of Texas cattle, or cattle liable to communicate Texas or splenic fever, shall be disinfected by the use of quick lime washing. It is further recommended that the stock-yard companies set apart certain pens for native cattle, and that they be thoroughly washed and cleansed as above. We would recommend that these precautionary measures be in force until October 1.

We are of the opinion that if these suggestions are rigidly adhered to there need be no apprehensions whatever of the spread of splenic fever among native cattle in transit.

J. H. PAYNE.
H. M. TAYLOR.
J. H. FULLINWIDER.

TOPEKA, KANS., *August* 1, 1884.

GENTLEMEN: Your communication of August 1, in regard to the disinfection of cars used in the live-stock traffic, is received, and your recommendations will be at once adopted by the Atchison, Topeka and Santa Fé Railway Company. Orders for the enforcement of the measures you propose are issued, and will be in effect upon the lines of this road from and after August 3.

Respectfully,

A. A. ROBINSON,
General Manager Atchison, Topeka and Santa Fé Railroad.

J. H. PAYNE, H. M. TAYLOR, and J. H. FULLINWIDER,
Agents United States Bureau of Animal Industry.

LAWRENCE, KANS., *August* 2, 1884.

GENTLEMEN: I am in receipt of your communication of the 1st instant, in regard to the disinfection of cars, &c., in the live-stock traffic. In reply I beg to state that your recommendations will be at once adopted by the Kansas City, Lawrence and Southern Kansas Railroad Company.

Orders for the enforcement of the measures you recommend are issued, to take effect August 4, 1884.

J. L. BARNES,
General Superintendent Kansas City, Lawrence and Southern Kansas Railroad.

JAS. H. PAYNE, H. M. TAYLOR, and J. H. FULLINWIDER,
Agents Bureau of Animal Industry, Topeka, Kans.

Upon the outbreak of the fever at Ogalalla and other points on the Union Pacific Railroad, the officers of that road were prompt to issue orders for the thorough disinfection of cars, and declined to receive Texas cattle for transportation until after frost.

The manner in which railroad companies and stock companies generally have endeavored to avoid the spread of the infection is deserving of the highest commendation.

In the shipment of cattle by rail in the ordinary car, serious injury is frequently inflicted upon the animals by the sudden stopping, starting, and jolting of the cars. Many efforts have been made to remedy this by using improved forms of cars, but up to the present time none have been built that will accomplish the desired result for the transportation of range cattle. The so-called parlor cars may do very well for the shipment of gentle, stall-fed cattle, but will not do for the wild steer of our western ranges. The following resolutions of the Wyoming Stock Growers' Association indicate the direction in which improvement is most needed:

Resolved, That it is the unanimous sense of this association that we earnestly invite the attention of transportation companies to this important matter.

And be it further resolved, That we especially invite the attention of transportation companies to the following specific requirements to overcome the evils referred to viz., vertical or jolting motion, lateral or side motion, longitudinal or lengthwise motion of car bodies.

And be it further resolved, That the members of this association will encourage and foster in their live-stock shipments, as far as possible, such transportation companies as will furnish to shippers such improved gear for stock cars as will insure a saving in shrinkage and decreased valuation.

Much of the injury inflicted upon cattle shipped by rail is unavoidable while the common cattle car remains in use; but at the same time the fevered, half-starved, and exhausted condition in which most cattle shipped long distances reach their destinations can be avoided by judicious handling while *en route*. These cattle are generally on the road for a number of days, and are wholly unable to obtain adequate rest from the start until they are finally unloaded. As a matter of course they cannot rest in the cars, and when unloaded for feed and so-called rest they are generally crowded into pens so closely as to make it impossible for them to lie down. Range cattle must have room to lie down without coming in too close contact with each other, or they will remain on their feet, no matter how great their fatigue. Then the stops for feed and rest required by law are generally planned to take place during the day, a time when wild cattle are kept constantly disturbed by the strange sights and confusion constantly around them.

If these stops for rest were arranged to take place in the quiet of the night, it would enable animals to get the desired and greatly needed rest. This plan would have the additional advantage of keeping the animals as cool as possible during transit in summer, for they would rest during

the cool hours of the night, and in the heat of the day they would be kept cool by the current of air resulting from the motion of the cars.

Too much importance cannot be attached to the matter of securing good nutritious hay for feeding cattle in pens while resting, of which a full supply should be furnished. Shippers sometimes from false motives of economy do not half feed their cattle, and the hay which is frequently supplied by the railroad and stock-yard companies is of such poor quality as to be of little value for food. Stock-yard companies should be required by law to supply the very best of hay, and furnish full feeds to all animals stopped off in their yards, whether the owner or shipper orders it or not. The limit of time that cattle are permitted to be run on cars without being unloaded for feed and water should be computed from the time the loading of the cars is commenced to the time when they are unloaded. Very often cattle are loaded on cars and then side-tracked and delayed, and are held in cars after stockyards are reached for considerable time without being unloaded and fed. Heavy penalties should be enforced for violations of these greatly needed regulations.

Cattle should, if possible, always be shipped in train-load lots, and special runs secured by which right of way is obtained in preference to trains carrying dead freight. With proper care in unloading cattle, avoiding crowding too many in a car, and proper attention on the part of shippers in charge keeping the cattle on their feet while in the cars, and avoiding runs over twenty-four to twenty-eight hours, with rests at night in roomy pens, with pure water and abundance of nutritious hay, cattle can be shipped from extreme Southern Texas to northern ranges without any material loss.

The rates of freight given by the railroads from San Antonio, Tex., to Cheyenne, Wyo., the last season, of $120 a car, rendered shipping preferable to driving between the points named, for the reason that cattle can be carried by rail from San Antonio to Cheyenne in seven days, including stops for feed, &c., and can be placed by this means on extreme northern ranges at such an early date as to insure their getting located and fat before winter storms commence, rendering the death loss nominal, and gaining nearly a season's growth, which in itself is worth the cost of the freight.

I have received assurances from the managers of the railroads interested in this movement, that if satisfactory shipments were secured they would divide the through rate of freight on cattle from the infected district of Texas, so that a portion of it could be used one season in carrying cattle from Southern Texas to Western Texas, where they can be wintered or held in quarantine, and then shipped on to destination the following spring. Cattle can be shipped into Western Texas late in the fall, and if turned out on fresh range with plenty of water they will winter well and be prepared for movement north the following spring.

The northern country is the great beef-producing section, the South is the nursery-ground, and the movement of young steers from the South to the North is destined to grow and increase until it assumes mammoth proportions, and whatever can be done toward the success of this movement, in the matter especially of transportation, will prove of benefit to the beef-consumers of the nation.

CONTAGIOUS PLEURO-PNEUMONIA.

The full reports heretofore made by the Bureau have proven beyond controversy the existence of pleuro-pneumonia (lung plague) among cat-

tle in the various portions of the East and in the Mississippi Valley, as also the serious character of the disease. Every intelligent stock-grower in the land recognizes the importance and necessity of protecting the herds against the ravages of this disease, and a united call will be made upon the General Government at the coming session of Congress for the passage of such laws as will enable the proper authorities to effectually and forever prevent the introduction of any infectious disease into the country now free from its baneful presence. In the minds of a few western men has existed the hope that the elevation and pure air of the great plains were such as to prove a barrier to the introduction of bovine diseases; but as it is shown to them that pleuro-pneumonia originated in the mountain plateaus of Central Europe, a country as much elevated and with as pure and bracing an atmosphere as the most favored spots on our ranges, they at once accept the proper view and join in the demand for protection. Scientific and practical investigation has definitely settled the fact that pleuro-pneumonia is carried, not developed. This being true, there is no safety except in keeping out all cattle infected, or that have been exposed to infection. Let this scourge once gain a foothold in the open range country, and ruin would be the portion of every one owning cattle. A billion dollars would be wiped out in a single season.

What, then, is to be done? Every owner of cattle on the range, whether resident or non-resident, must join in the demand upon the General Government for the passage of such laws as will enable the State and Territorial governments, from the Gulf of Mexico to the British Possessions, to establish and enforce a system of quarantine against all outside sections that will forever and effectually prevent the introduction of any diseased stock. The West as one man demands protection, and the East, if alive to its interests, will join in the demand. This is not a call for legislation in the interests of the rich as against the poor, but for broad, open-handed justice to all. The great bulk of the cattle on the ranges are owned by the struggling, ambitious young men of the East who have had the courage to come West and make a fight for position and fortune. The results of their struggles are felt in the East by the lowering of the price of meat. Thus the western ranchman and the eastern voter are mutually pledged, as a matter of common concern, to ask suitable protection to the western meat interests. There must be no half-way measures. The law must be strong, and contain no ambiguous clauses. It must give power not only to quarantine against disease centers, but suspected localities. It must confer authority to destroy infected and exposed animals, and also the right to burn infected barns, corrals, and fences, and punish violators of the law. If the East is true to its own interests, it will join hands with the West, and Congress will listen to and heed the demand for proper and thorough protection.

There are to-day eight main lines of railroads penetrating the range country from the East, and four lines from the Pacific Coast. These west-bound roads are almost daily bringing into the country high grade and thoroughbred animals to be sold to western ranchmen. These animals are gathered up in the East at all points, and without some more certain means than now exist for knowing whence they came and to what conditions they have been exposed while in transit, safety demands their indefinite quarantine. There must be some means other than the affidavits of interested sellers by which to determine the condition of imported cattle. Beside the eight lines of railroads that are to be closely guarded, there are 1,200 miles of border line on the east,

at any point of which a diseased animal or herd may be crossed. Importations are occasionally being made to Pacific ports from foreign countries, and disease is liable to slip in from that source unless the proper safeguards are always at hand. Vigilance on the entire border is the price of safety. The most practical measures, uniform in character all over the country, alone will suffice. *Healthy cattle or no cattle at all must be the motto.*

SPLENIC FEVER.

While the average ranchman is in greater dread of the lung plague, because if once in his herd it means annihilation, he is also greatly exercised over southern or splenic fever. This has been the great disturbing factor in the cattle business for the last two years. Thousands of dollars' worth of cattle have died from its ravages, and commerce between States has been so unsettled that cattle values have depreciated $50,000,000 or more in consequence. Trade between the North and South has been paralyzed, values everywhere unsettled, and bankruptcy forced upon hundreds of breeders and dealers in the South. Most of the Northern States and Territories have quarantined against Texas and the entire country south of the thirty-fourth degree of north latitude. Accusing or excusing this individual or that community is not the province of the writer of such a report as this. Cold facts are to be given, the consequences falling where they may. Splenic fever is a fact. As a fact it has been known for years; but its fatal results on northern herds have been doubted and disputed by some southern owners until strong feeling on both sides have grown up among those in interest. The quarantine laws of some of the Northern States and Territories against southern cattle have excluded cattle from non-infected districts, and have been looked upon with suspicion by many southern owners, and a doubt has been raised in the minds of northern officials as to the intention of drovers to honestly obey the laws. So long as the situation remains as it is, there will be crimination and recrimination between the stock interests of the two sections.

This is all wrong, and there is a way to overcome it. The intelligence of both North and South recognizes splenic fever as a southern product, and one that requires the profoundest investigation and most carefully and conscientiously prepared regulations to avoid injustice. If cattle raised south of a certain line have within them the germ of a fatal disease that is thrown off and taken up by the cattle with which they come in contact, then the public safety demands that restriction be placed upon them, and that they be not allowed the opportunity to infect other herds. On the contrary, if southern cattle are perfectly healthy, and are not liable to impart disease to northern cattle with which they may come in contact, they should have the fullest liberty of movement. This is a very simple proposition. No sane man claims the right to deliberately carry the germs of disease and spread them in his neighbor's herd. Neither does he deny the justice of a law to punish the individual who would thus wantonly injure his neighbor. This is the splenic fever situation. If the cattle from below a certain line carry disease and death with them, there must be a law regulating their movement and imposing the severest penalties for its violation. The intelligent breeders of the infected districts of the South admit the existence of the splenic fever germ in their herds, and, as honest men, are not only willing but anxious to aid in the bringing about of such legal regulations as will mete out justice to all. The way is open. After years of careful and scientific investigation the Bureau of Animal Industry is in

possession of such an array of facts as will enable it to mark out a line in Texas from northeast to southwest, and assert with confidence that it is the true line of infection. With such a line definitely established, and the information sent out that all cattle from south thereof are infected or possessed of a fever germ that is liable to impart a fatal disease to other cattle, commerce would at once adjust itself to the new conditions. The line, with all the implied conditions, would be respected by all parties, and the quarantine legislation of the various States would be based thereon. Texas, the great breeding ground, would at once arrange its cattle trade in harmony with the new departure, and peace would reign in all the cattle country. Ranch owners north of this line would move their non-infected herds north as demand required, and their vacated pastures would be refilled with cattle from over the line to be wintered on a fresh range and prepared for the next year's northern market. A very large area of north and west Texas would fall above the line, and thus room would be furnished for all the surplus cattle of the region south. Under this system all the cattle moved north will have been purged of their power to impart disease, and both rail and trail would be free from infectious germs. This would relieve the dread of intending purchasers, and open for southern steers a market among buyers of feeders. Another very important feature would be the increased capacity of the ranges of Northwest Texas. As soon as the grass attained sufficient size in the spring, the herds of young steers would be moved out and sent north, leaving the pasture unoccupied until August or September. By this time the growth of grass would be such that one-third more cattle could be wintered than if the range had been trampled and eaten during the summer months. Another important gain would be the ability to use the railroads in transporting cattle north. Experienced ranchmen in the North are willing to pay $3 a head more for two-year-old steers delivered on their northern ranges, fat, the last of May, than for the same animals off the trail in September, poor, and with the virtual loss of the summer's growth. The winter's mortality would be 10 per cent. less in the former case, and a season's time gained in the maturing of the steers. A two-year-old steer shipped from Northwest Texas the 15th of May, and turned loose on a Wyoming range the 22d of May, would be as large, and would bring virtually as much money in the Chicago market in October, after he was three years old, as the same animal would in October, after he was a four-year-old, if driven in and turned loose in September of the same year. Again, if the movement of cattle is to continue from the South to the North this arrangement will prove most beneficial, for the reason that it will be impracticable to obtain yearlings; they will be held over on the dividing ranges on neutral pastures until they are two-year-olds. With northern ranges crowded as they now are, the purchase of southern yearlings for northern ranges is a doubtful investment, and should be discouraged. Thus the advantages to flow from the establishment of the fever line are manifold and easily discovered. Of course, following the pointing out of this line by the Department should be the passage of a law by Congress making it a legal line, and directing its recognition by all the people.

OUTBREAKS OF SPLENIC FEVER IN 1884 AND 1885.

It is my purpose under this head to mention only such outbreaks of splenic fever as came under my immediate notice, and such as I may have information about from gentlemen whom I personally know to be competent and reliable.

AT PUEBLO, COLORADO.

During the last week in May, 1884, a train load of cattle from Southern Texas was unloaded at Pueblo, Colo., and driven out of town in a northwesterly direction, remaining on the trail feeding for several days. Other lots followed from the South, and were unloaded at the stock yards in Pueblo. In from three to six weeks after the Texans had passed over this trail, cattle that were exposed to the trail began to die of a disease, the symptoms and *post mortem* appearances of which proved it to be splenic fever beyond a doubt. The animals attacked became sluggish, rumination ceased, and they would be observed to stand apart from their fellows, with arched backs; the bowels were greatly constipated and the urine was of a dark bloody color. The temperature was high, being in some instances as high as 107° F. The *post mortem* examinations showed enlargement of the spleen (the substance of the organ being of a "granular and broken down appearance"), impaction of the third stomach, and bladder filled with bloody urine. The blood was of a dark, non-fibrous character. The disease proved to be particularly fatal to cows. At the Riverside dairy between 15 and 20 head were lost, while Mr. J. Cline, of the Mesa dairy, lost a number from the same cause. Besides these cows there were a number of cattle belonging in Pueblo, and on the ranges immediately adjoining the trail of the southern cattle, that died of splenic fever. All cattle infected in this locality belonged to herds feeding over the trail.

AT LA JUNTA, COLORADO.

About the 1st of June, 1884, two train loads of southern cattle were unloaded at La Junta, Colo., and driven out of town over two different trails. About the middle of July cattle in and around La Junta were attacked with splenic fever, and about 200 died. They showed the same symptoms and appearances as those which were attacked at Pueblo, and in every case the cattle attacked were known to have been exposed to the trails of the cattle brought in by rail from the South. It should be stated that during the month of July the weather in Southern Colorado was very dry and hot.

AT BRADY ISLAND, NEBRASKA.

At this point 2,000 Texas cattle were unloaded from trains in May, 1884, and driven to Rankin's ranch, some 60 miles northward from Brady Island. There were some 300 native cattle feeding on this ranch at the time the Texans arrived. All of these caught the fever and died before the 1st of August, except 2 small calves. The first outbreak occurred among these cattle in last half of July

AT MAXWELL.

At Maxwell, on the Union Pacific Railroad, a short distance from Brady Island, similar cases occurred. Texas cattle were brought in by rail, and about July 20 the native cattle that had in any way been exposed to the trail infected by these Texans began to die, Mr. John McCulloch being an especially heavy loser.

TEXAS CATTLE THAT DID NOT COMMUNICATE THE FEVER.

In this connection it might not be out of place to mention a case where Texas cattle from the infected district failed to give the fever to

susceptible native cattle. About the middle of May Mr. T. E. Wheeler bought 400 head of Texas yearlings, half steers and half heifers, and immediately shipped them by rail from San Antonio to Denver, and drove them from there to his range near Lupton, Weld County, Colorado, arriving there about July 20, having been delayed nearly sixty days on the railroad at Murphyville, in Western Texas, by a washout. These cattle on reaching Mr. Wheeler's range in Colorado, were turned on the range with a lot of highly graded natives. The natives and Texans grazed and watered together the remainder of the season, and Mr. Wheeler has not had a case of splenic fever among his cattle.

The present season of 1885 has been one unusually free from outbreaks of splenic fever. This is to be attributed somewhat to the fact that there is a great difference in years in respect to southern cattle infecting northern ranges. As an illustration in point, I would call attention to the fact that in 1873, Col. G. W. Thompson, of Trinidad, Colorado, one of the largest cattle-owners in the West, drove a large herd of native Colorado steers from his ranch near Trinidad to Great Bend, Kans., crossing trails of southern cattle and bedding his native cattle on the same ground that southern cattle had been bedded on a short time previous, without any of his cattle becoming infected.

In the year 1879, Colonel Thompson drove 900 steers from the same range to Dodge City, Kans., and lost over three-fourths of his cattle by fever contracted by crossing trails of southern cattle. It is reported that some cattle have died this summer near Camp Supply, in the Indian Territory, from fever occasioned by droves of Texas cattle that were for a time blockaded near there while *en route* north, and the statement was made by Messrs. Towers & Lee in a telegram to Hon. L. Q. C. Lamar, Secretary of the Interior, that "all of the herds were infected," and "that the owners knew it." If native cattle have died with fever, as alleged, on the trail, it is reasonable to presume that they contracted the fever from some cattle that were shipped from southern Texas to Harold, Tex., and then driven north, infecting the trail before the arrival of the herds that were contracted for delivery in Colorado and held in blockade as stated. A number of these blockaded herds, to my personal knowledge, were from the non-infected district of Texas and were incapable of imparting disease, and as even the herds from the known infected district of Texas were driven all the way, and had been removed from the infected district about long enough to free themselves of infection, it is not reasonable to lay the charge of infection to the blockaded herds, while it is known that positively infected cattle shipped by rail from the infected cattle district, and only removed a few days from the infected district, had first passed over the trails. All cattle from the infected district of Texas shipped north by rail seeking admission to Colorado were denied bills of health by Dr. G. C. Faville, veterinarian of the Colorado State Veterinary Sanitary Board, while all cattle that had been driven all the way north from their original ranges in Texas were given bills of health by Dr. Faville, and were admitted into Colorado, and not a single case of fever has to my knowledge been traced to them. The Hon. D. L. Taylor, president of the First National Bank of Trinidad, and the owner of a large herd of cattle near Fort Sumner, N. Mex., reports that about 200 head of cattle have died of splenic fever this summer on his range, and reports that I have received from other quarters indicate that losses have occurred on other New Mexico ranges.

THE CAUSE OF SPLENIC FEVER.

The cause of splenic fever is generally conceded by intelligent observers to be the introduction, into the system of the animal, of a parasitic vegetable germ, which is supposed to live as a parasite upon the grasses of those sections of the Southern States bordering upon the Gulf of Mexico and northward along the Atlantic coast as far as North Carolina. The climatic conditions peculiar to this section of the country seem to be necessary for the propagation of this germ as a vegetable parasite, that is, to enable it to fructify, producing spores which will, under favorable climatic influences, reproduce the original germ. This germ does not usually survive sharp frosts, and hence the abatement of the disease as soon as frosts are experienced. It has been observed, in most localities where splenic fever has broken out in non-infected districts, that frosts check the ravages of the disease, and it does not again appear unless introduced anew by cattle from the infected regions, and that in such instances the locality is always outside of what is known as the "permanently infected district." In other localities, either inside of the "permanently infected districts" or very near the dividing line, it has been observed that the fever will abate after a few sharp frosts, but that sometimes the infectious principle will resist the cold of winter, and the fever will make its appearance again the following season. Why this difference? Why should the disease be entirely eradicated by the frost in one locality, while in the other it merely disappears to reappear the following season?

The following explanation is suggested: It is known that the fruits of certain forms of vegetable life will resist a degree of cold which is death to the plant life itself, and that the seeds of many of our common annual weeds and grasses, and the spores (fruit or seed) of certain fungi will withstand agents that produce death in the fungi themselves. Is is, therefore, suggested that in localities where the frost entirely eradicates the disease, the climatic and other conditions necessary to enable the disease germ to produce spores do not exist, and the germ itself succumbing to the frost, there is nothing left for the reproduction of the disease the following season. In those localities where frost does not eradicate the disease the exact opposite of this proposition is taken to be true, *i. e.*, the climatic and other conditions exist which are necessary to enable the disease germ to produce spores which resist the action of the frost, which is death to the parent germ, and in the following season they germinate and reproduce the disease germ, and these entering the system of a susceptible animal, produce splenic fever.

We must not conclude, however, that because these germs are not able at this time to produce spores in a given locality, and thereby bridge over the winter season, that this will always be the case, on the contrary, this disease has steadily advanced from the tide-water districts inland, and the line dividing the infected from the non-infected district has by degrees moved northward, and the disease has become permanently planted in sections where before it did not exist. This is full of meaning, for it shows that this disease germ has the ability to gradually accommodate itself to a change of climate and produce the frost resisting spores in a climate and under surrounding influences where a short time before it could not have done so. Each year it is found further north than it was the preceding year. How long this will continue, or how far north the germ will eventually become acclimated, it is of course impossible to say; but unless some way is found to stop the onward march of this "danger line," some of the States which are now

so ready to enact laws hostile to the interests of sections infected with splenic fever will find themselves within the "permanently infected district."

HOW COMMUNICATED.

Southern cattle feeding upon pastures infected with this disease germ are seldom affected with splenic fever in a severe form, and yet nearly all southern cattle are said to have the disease at some time in a mild form. The attack may be so slight as not to be noticeable, and yet *post mortem* examinations of southern cattle almost invariably show that the animal either was at the time of its death suffering from this disease in a mild form or had done so at some previous time. Why it is that these cattle should have the disease in a mild form only, while northern cattle taken into the infected regions are almost sure to have it in a virulent form, is a mystery. All we can do with our present light upon the subject is to admit that cattle that are not inured by constant exposure to the causes of the disease are almost invariably attacked in a virulent form, while those that are so inured escape with but a slight attack. It is claimed that the grasses in the infected districts are covered with the germs which produce the disease. These germs are taken into the digestive organs, which form a vast magazine of death-dealing agencies when the southern cattle are taken northward upon non-infected grounds. The extensive digestive organs of a steer have been estimated to hold about a barrel of this infected matter, which is distributed through the agency of the excrement for weeks over the lands wherever the steer may graze. How long a time transpires before these germs are entirely eradicated from the system is not definitely known, but cattle driven along the trail from the tide-water sections of Texas to Colorado work off the germs of the disease before reaching that State, and do not infect pastures so as to be dangerous to native cattle. The case of the 400 head of Texas cattle shipped by Mr. T. E. Wheeler, from San Antonio, Tex., to his range in Weld County, Colorado, is an apt illustration of the manner in which southern cattle will free themselves of the infectious principle when removed from the infected grazing districts. In this case the cattle were delayed sixty days outside the infected district, and they must have been out of this district fully seventy days before they were placed upon the range with Mr. Wheeler's high grade cattle, natives of Colorado. In this case seventy days was long enough for them to rid themselves of the germs of the disease, for not a single case of splenic fever or loss of any kind occurred among any of Mr. Wheeler's cattle, although the natives and Texans were pastured and watered together from July 20 to the end of the season. I do not know of an instance where infection has occurred after the cattle have been out of the permanently infected region for ninety days, and in the case of Mr. Wheeler's cattle, seventy days were enough to render them perfectly harmless. It is of the utmost importance to ascertain just what length of time is necessary for cattle from infected districts to rid themselves of the infectious principle. For the accomplishment of this purpose an extensive series of experiments should be instituted, commencing early in the spring and continuing throughout the season.

As remarked above, the disease germs are deposited with the excretions upon the non-infected lands over which the tide-water cattle graze, and these lands become so infected as to be the means of conveying the disease to the cattle of the non-infected regions. Northern cattle, however, taken to the tide-water districts, will take the fever as readily and in as virulent a form as if exposed to the infection through tide-water

cattle on the northern ranges. While cattle taken from the infected to the non-infected districts will convey the disease to northern cattle, nevertheless the northern cattle thus infected will not communicate the disease to other native cattle. In explanation of this it is supposed that since the cattle from the infected sections are from some cause not susceptible to the disease, the germs are unable to multiply in the tissues of the animal and escape from the system with the excrement, and thereby infect the grazing grounds. When, on the other hand, the native cattle are attacked with the fever, the disease germs nearly, if not quite all, enter the lymphatics, particularly of the liver, spleen, and abdominal cavity, and hence there is no way in which they could escape from the system of the sick animal.

When native cattle have been grazed upon northern infected pastures, or with southern cattle, the disease rarely makes its appearance before the middle of July. If, however, we go as far south as the lower tier of counties in the State of Kansas, the disease is liable to make its appearance a little earlier, many cases having occurred in the first week of July and some even in June.

A case is on record where Texans and natives have fed together on the same pasture up to July 1, when a portion of the natives were removed and remained perfectly healthy to the end of the season. Of these natives left grazing with the Texans during July, almost all died before the middle of August. This would seem to indicate that the spores or germs produced therefrom must reach a certain stage of development before being capable of producing splenic fever, and that this development must take place before it enters the system of the animal, and further, that this stage of development is not reached until about July 1. A series of careful experiments and observations in different parts of the country to ascertain the truth or falsity of this deduction is greatly to be desired in order to ascertain with accuracy the date, if any, up to which it is safe to graze native cattle over trails or land upon which southern cattle have been grazed or trailed. This date may be different in different localities, and hence the importance of carrying on these experiments in different sections of the country.

(1) Briefly, then, the cause of splenic fever is supposed to be a parasitic fungus or disease germ growing on, or attached to, grasses in tidewater sections of the Southern States.

(2) The sections where this fungus reproduces itself from year to year are what are known as the "permanently infected districts."

(3) While cattle in the permanently infected districts become inured to the disease, and are not therefore violently attacked by it themselves, they nevertheless carry the disease germs in their systems and deposit them with their excrement, and thus infect the trails and pastures over which they graze.

(4) The only way in which cattle can contract splenic fever in sections outside of the permanently infected districts is by grazing over pastures or trails thus infected by southern cattle.

(5) Cattle from non-infected districts sick with the fever do not impart the disease to healthy stock, nor do they infect the lands over which they graze.

(6) Cattle from permanently infected districts expel the disease germs in a certain length of time after leaving these districts, probably in from seventy to ninety days, after which they are incapable of infecting trails or pastures, and cannot in any way communicate the disease.

(7) In the greater portion of the country north of the permanently infected districts, the disease germ does not reach the stage of develop-

ment necessary to enable it to produce the disease until about July 1, and this development must take place before the germ enters the system of the animal.

(8) A few sharp frosts put a stop to the ravages of the fever, entirely eradicating it in those sections outside of the permanently infected district, while within the district frosts merely check it until the following season.

I have given this outline of a theory of splenic fever not with the idea I was advancing anything new in the study of the disease, further than some deductions and suggestions based upon facts which have fallen under my observation, but rather with the object of placing a plain and easily understood statement of the cause and development of this scourge before the cattlemen of this country, and with the further object of using it as the basis of recommendations, which, while protecting cattle of non-infected districts from this disease, will permit the movement of cattle from the infected districts, under proper restrictions, to northern maturing ranges, as well as to the beef markets of the country.

It is very generally conceded by those who have made this matter a study that the line dividing the infected from the non-infected portions of Texas runs in a course from northeast to southwest, and that it is a line defined upon the altitude of the country. This line will be officially determined at the earliest possible moment, and healthy cattle from the non-infected district should be permitted to move north, either by rail or trail, without restriction.

Arrangements should be made for quarantine grounds north, on lines of railroad, to which cattle from the infected districts can be shipped by rail and held in quarantine ninety days, until freed from infection. Cattle from infected districts should also have right of way over established trails running north from Texas to the Arkansas River, from which native cattle can be excluded during the summer months. The problem of cheap beef depends so largely upon this movement of cattle from Texas to the maturing ranges of the north, that it is a matter of national importance that an outlet for these cattle be kept open. With the enforcement of quarantine laws limited to the protection of cattle from disease, instead of being used to shut out cattle from healthy competition on the pretext of disease, this vexed question will find a practical solution that will prove of benefit to the entire country.

NATIONAL QUARANTINE GROUNDS.

In the States and Territories north it is somewhat difficult to establish quarantine grounds near railroads unless done by purchase of the alternate sections of land belonging to railroad companies, to be used with such sections of land as are yet held by the General Government, and even presuming that this could be accomplished, we are aware that there are private settlements on more or less of the Government sections of land, and to expect to acquire the possessions of these settlers would seem to be an expensive, if not an impossible undertaking. There is, however, apparently one way by which the General Government can solve this problem without involving any expense to the Government or infringing the rights of individuals. The strip of country lying south of Kansas and north of the Panhandale of Texas seems to offer this solution. If this is Government land, as is generally believed, could it not be set apart by the Government by legislative enactment for the purpose of quarantining such cattle as are known to have come from

the splenic-fever infected districts? This could be made to cover a three-fold purpose: (1) Establishing the status of this land; (2) settling the disputed right of these cattle to enter this strip, as was the case this season; (3) it would solve the general question of handling cattle claimed to be infected.

This strip is of sufficient size to accommodate all that class of cattle, and its boundaries could be protected by some system of fencing, and cattle coming from the infected district of Texas could be placed there without trespassing upon the domain of any other State or Territory. It could be made subject to such police veterinary regulations as might be necessary, and as a very small portion of it is susceptible to cultivation it would be doing no injustice to the people who till the soil, while it could be made to serve a great benefit to an industry in which not only the farmers of the Western States are becoming each year more and more interested, but which is of vital importance to all the people of the Union as an industry which supplies a prime necessity of life.

It is not suggested that the Government divest itself of its title in this territory, but that, while in the judgment of Congress this neutral and unoccupied land can be utilized for the purpose so universal in its benefits to the American people, it shall be dedicated to this use.

FOREIGN IMPORTATIONS.

The cattle trade of the United States has recently been greatly disturbed by the prevalence of contagious pleuro-pneumonia west of the Alleghany Mountains. Quarantine measures have necessarily been enforced by our Western States and Territories against importations of cattle from States where contagious pleuro-pneumonia was known to exist, and great losses and hardships were the result. It is estimated that the State of Missouri alone suffered to the extent of $1,000,000 by reason of the depreciation of values of cattle in her borders on account of being practically shut off for a time in marketing her cattle, on account of the outbreak of pleuro-pneumonia in Callaway County. Radical measures are necessary not only to stamp out what contagious disease exists among the herds in our country, but also to prevent the introduction of diseased animals from countries where infection prevails. We can never permanently free our country from the bane of contagious bovine diseases without shutting out all cattle from foreign countries where contagion exists. Why should our Government permit importations of cattle from foreign countries where contagious cattle diseases exist, when these countries, especially England, prohibits entirely the admission of live cattle from the United States? "It is a poor rule that will not work both ways." "An ounce of prevention is worth a pound of cure," and we can never hope to keep our herds permanently free from disease while we admit cattle from countries where contagious cattle diseases are known to exist. If a single infected animal introduced into Australia caused a loss from pleuro-pneumonia of over $44,000,000, it will be seen that the responsibility which is placed on quarantine officials is too great to insure with certainty that no infected cattle will gain admission.

There is too much money invested in the cattle industry of the United States to permit of any chances being taken. I am aware that I will incur the opposition of a class of live-stock papers, largely subsidized by importers, in the radical stand I have taken in this matter, but I feel that my highest duty is to the cattle owners of the United States, and the interests of a few traders and subsidized newspapers sink into in-

significance when compared with the other vast interests at stake. While I admit the advantage to be derived from the infusion of new blood into our herds, it is small as compared with the risks attached to its introduction. I voice the views of the major portion of the prominent range cattlemen of the West in the views above expressed.

QUARANTINE REGULATIONS RELATING TO PLEURO-PNEUMONIA.

The system of inspection that has been in vogue the past season by quarantine officials in admitting cattle to our Western States and Territories from known infected districts upon the affidavits of interested dealers, even though backed up by certificates of county officials as to the standing of the dealers, and although supported by statements of supposed disinterested parties, is pernicious and full of danger. It is too much to presume that human nature is perfect, and while a large majority of the dealers are undoubtedly honest men and their statements worthy of credence, at the same time, when it is considered that cattle in the known infected portions of the United States can be bought at greatly reduced prices on account of the prohibition against those sections, the temptation to profit by this state of affairs and cause cattle to be purchased, and taken to remote markets for sale is too great to be resisted by every one.

If unscrupulous men obtain money from banks by forged checks, and if parties sometimes commit robberies by reason of confidence secured through unmerited certificates of character, how can we reasonably suppose that a higher state of morality exists among those who may be induced by reason of expected profit to handle cattle from infected regions? The sad experience that Missouri has just gone through in the matter of being shut out from the markets of the country by reason of an outbreak of pleuro-pneumonia, should be a lesson to be profited by, by States and Territories now free from infection, without undergoing the expensive experience themselves.

In Missouri 1 bull, apparently healthy, carried from the Tripp herd in Illinois to Callaway County, Missouri, developed contagious pleuro-pneumonia six months after leaving the infected herd from which it originated. This statement of fact is full of meaning, and justifies us in our conclusion that the only safe plan to pursue on the part of veterinary sanitary boards of the States and Territories that are as yet free from infection, so long as there is no national legislation, is to absolutely prohibit the introduction of all cattle from all States and sections where contagious pleuro-pneumonia or other contagious cattle diseases are known to exist, or else quarantine these cattle six months on their borders before giving them bills of health. Under the police powers of the various States they certainly have the right to pursue this course, and it is the opinion of the large majority of the cattlemen of the West, from Texas to Montana, that this radical course should be pursued. The range men feel that the introduction of contagious cattle diseases on the plains means absolute ruin, and they propose to protect themselves in such a positive and practical manner as will prevent, beyond all possibility, the introduction of diseased cattle to their ranges.

LEASING THE PUBLIC DOMAIN.

No single question before the National Convention of Cattle and Horse Growers held at Saint Louis a year ago received the consideration, or caused such animated discussion, as that of leasing the public domain;

a remarkable feature of the discussion being that each of the opposing parties, while widely differing as to the public policy of the proposition, assumed to be striving for the same results, namely, protection to the small holders. While the arguments in favor of the proposition were able and ingenious, it is my opinion, from a careful study and investigation of the whole question, that the proposition is fraught with danger to the small holders and to the best interests of the entire live-stock industry as well. The theory that the leasing system would enable the small holder to acquire substantial rights as well as his more opulent neighbor, or large corporate associations, appears plausible, but in practice would defeat the very objects contended for by the friends of both sides of the controversy. In my judgment twelve months would not elapse after the passage of a lease law before every foot of the public domain, available for grazing purposes, would be taken. Every leaseholder would at once assume an authority and control he never dared attempt to exercise before. With nothing to prevent the different herds from passing at will, owners would enter upon the task of driving from the territory, over which they had acquired rights, the herds of their neighbors who had become unwilling trespassers. The whole industry would be plunged into a war. In such a condition of things where would be the protection to the small holders? All the advantages would be on the side of aggrandized capital, and the weaker vessel would go down. It is as certain as anything can be that security to the small holder lies in the uncertain tenure by which all enjoy the benefits of the public lands.

The proposition to continue the homestead and pre-emption laws in force as to the lands leased is a "delusion and a snare." No man seeking a homestead would have the courage to attempt to secure a home within the limits of any of the princely possessions enjoyed by the large leaseholders. The law might give him the right, but the proscription and persecution that might be practiced by the strong arm in possession, would nullify the privileges extended by the law—would defeat every effort and drive the small holder from the range.

The effect of a law leasing the public lands would prove disastrous in other ways. The public domain is the open sea on whose bosom is borne the immense traffic of the breeding grounds with the countries of the North. The system of leasing would be followed by thousands of miles of fences, as effectually closing the movement of these vast herds as a hundred impassable bridges built across the Mississippi River would destroy the highway from Saint Paul to the Gulf on the Father of Waters.

No better evidence that this open way would be obstructed by fences is needed than the honest and candid statement expressed by Mr. A. T. Babbitt, of Wyoming, in the convention referred to, when he said:

> We came from Wyoming objecting to the idea of a trail. Our objection has, to some extent, been misunderstood We did not object to it on the ground of the liability of infection or of cattle disease, because cattle driven from the South have never hurt us so far North, and we are not afraid of them. We have objected to the trail simply on the ground of safety of our investments. We have believed that if the Government made an appropriation whereby a public highway for cattle was to be established, over which the immense herds of surplus cattle from Texas were to be invited to come and overwhelm us, we were in danger of obliteration and extinction.

Mr. Babbitt favored the proposition to lease the public lands, and he foreshadows what his course would be as a leaseholder of lands across the trail. Some northern cattlemen claim that by shutting out southern cattle from northern ranges the value of their northern herds would be

advanced. While I have attempted to show the fallacy of this reasoning, in my paper entitled "Cattle Values Sympathetic," admitting it to be true, the result would be that the revenues derived by the Government from leaseholders would be more than offset by the increased price consumers would be compelled to pay for beef, and would defeat the policy of the Government, which seeks "the greatest good to the greatest number."

The representatives from Arizona, New Mexico, and Texas to the Saint Louis convention, largely favored leasing the public domain, but I believe without fully considering the inevitable results that would follow. Their highest interest lies in an open way to the north for their young cattle, and any system which is liable to hinder or obstruct this movement strikes at the very heart of their industry.

While under present conditions the large and small interests under control of local associations are harmonious, it might not be so when under a lease system large owners would acquire the power and be tempted by the opportunity to oppress the weak. Akin to this subject are my remarks in another paper on "Range Tenure," as to the question of overstocking any given range; it is a subject for consideration and settlement by local associations. Local self-interest in such matters will prove stronger than any written law, as all laws are weaker than public sentiment and private interest combined when they come in conflict.

RANGE TENURE.

Range cattlemen have very generally secured titles to all of the lands controlling the permanent water on their ranges, and as the mesa or high lands which generally predominate outside of the water-courses in the arid regions cannot be utilized except by those owning the water, and cannot be depended upon to raise crops, it will be seen that the ownership of the watering-places gives the tenure to contiguous ranges. This fact is recognized by Western cattlemen, and the question as to the number of cattle individual owners are permitted to hold, under regulations of the various local associations, is determined by the question of water frontage.

This action on the part of local associations has been necessary, in order to prevent such overstocking of ranges as would result in heavy death losses.

FENCES ON NORTHERN RANGES.

Cattle, during the cold blizzards to be encountered in winter on northern ranges, have to travel before the storm to keep up circulation of blood, and if checked up by fences will die. It is better to get cattle alive a hundred miles from the home range at the time of spring roundups than to get their hides alongside of pasture fences.

Small pastures for bulls and saddle horses are desirable, but beyond this use they are productive of more harm than good, and the President's recent order for the removal of fences from the public domain was an act of justice in the interest of sound public policy, and not in the least detrimental to the range interests.

DRESSED BEEF.

The economy and practicability of shipping dressed beef from Chicago, Saint Louis, Kansas City, and other points, as far east as the seaboard

States, I take to be an established fact, and in the few remarks I have to make upon the subject, I shall discuss the advisability of establishing abattoirs and refrigerators at points further west and within easy reach of the ranges of the West. The advantages of this mode of shipment have proved to be threefold: (1) The saving of freight on the offal and other gross matter, which saving should be greater. (2) The saving of shrinkage. (3) The animals are killed when they are in better condition than they possibly could be if shipped alive to the eastern markets, and, therefore, beef of a superior quality is obtained.

Now there is not one of these advantages that does not apply with increased force to shipment of dressed beef from points much nearer the great beef-producing ranges of the West. If the saving in shrinkage and freight between Chicago and New York pays a profit, why will not an even greater profit be realized by a saving in shrinkage and freight between Forth Worth, or other Texas points, and New York, or Denver, Colo., and New York? If the quality of beef is improved by reducing the distance of live shipment to 800 or 900 miles, why will it not be still more improved by reducing that distance to 100 or 200 miles, or better still, by slaughtering the animals when fresh from their native ranges? To carry on this business to the best advantage it is necessary that the abattoirs be located at points where the hide, horns, hoofs, tallow, &c., can be turned to profitable account. The number of manufacturing enterprises that follow in the wake of, and depend upon, the wholesale slaughtering of cattle is quite remarkable, and these slaughtering establishments should be erected at such points as furnish all the requirements for these manufactories, in order that they may be induced to enter the new field, and thereby cause a market for the various parts of the animal mentioned above. Without doubt the business could be profitably conducted at points where these facilities for the disposal of all the parts do not exist, but where this is the case the business will always yield a reduced profit.

Texas, Colorado, Wyoming and Montana possess points where slaughtering establishments could be profitably conducted, with the facilities for the disposal of all parts of the animals.

The general interest manifested in this subject by cattlemen justifies the belief that they would willingly become stockholders in the enterprise; for while it would mean largely increased profits in the business of cattle growing, they could at the same time share in the profit of the enterprise established to prepare these products for the consumer. It is reasonable to assume that the conditions which make every part of the slaughtered animal of practical utility when slaughtered at such points as Chicago, Saint Louis, and Kansas City, and which do not at present exist at cities nearer the mountains, would arise by the establishment of these enterprises.

In this connection it is proper to speak of the relative tariff rates charged by the railroads on live and dressed beef. When the rate from Chicago to New York was 40 cents per hundred on live cattle, the dressed beef rate was 70 cents. The latter rate would indicate that the railroads were determined not to be deprived of the revenue which would be derived from transporting the cattle alive, even though the bulk and weight be reduced one-half, greatly increasing the facilities for handling, and diminishing in the same ratio the risks to the railroad corporations. In short, a higher rate for the transportation of dressed beef than that exacted for carrying live cattle is indefensible from any standpoint, and rests on no other ground than that the arbitrary tax levied upon the cattle industry by railroads for transporting the product

from western ranges to eastern markets shall not be reduced for the people who have so long paid freight on 200 pounds for every hundred pounds of merchantable product carried to market. In other words, while the railroads obtain a fair rate on every hundred pounds the stockman has to ship, they require him to pay on the offal that should be left on the plains. United effort on the part of the cattlemen and slaughtering establishments ought to be sufficient to abolish this unjust inhibition on the business of slaughtering cattle on, or convenient to, the ranges where fattened and matured.

THE BLOCKADE OF TEXAS HERDS AT CAMP SUPPLY, IND. T.

The following correspondence in relation to the blockade of Texas cattle near Camp Supply, Ind. T., will explain itself. I can say that I have been acquainted with Mr. N. J. Dillon, the foreman of "The Cattle Ranch and Land Company" for a number of years, and that I know him to be truthful and trustworthy.

The following letters from Messrs. R. M. Wright & Co., of Dodge City, Kans.; C. W. Willett, secretary of the Western Kansas Cattle Growers' Association, and Capt. John T. Lytle, president of the Southern Texas Live-Stock Association, and one of the largest drovers of through Texas cattle, will show the mutual and harmonious understanding that had been entered into on the part of the drovers and the ranchmen along the line of the trail designated by the Dallas Convention, prior to the time the question of preventing the passage of those herds by Governmental interference had presented itself. These blockaded herds had been started north under contracts for delivery in Colorado and elsewhere, after the action of the Dallas Convention, which was participated in by parties not only interested in the driving of these cattle, but also by parties ranching in the neutral and Cherokee strips. It would therefore appear that the idea of preventing these cattle from passing through was an after consideration, and was attempted after the herds had started north, when it was impossible to turn them back without great loss and hardship to citizens of Texas, Colorado, and other States, who were pecuniarily interested in this drive:

TRINIDAD, COLO., *September* 20, 1885.

DEAR SIR: As you were foreman for Mr. John Clay, jr., manager of the Cattle Ranch and Land Company, near Camp Supply, Ind. T., and were on the ground at the time of the blockade of Texas herds in July, I would like to obtain from you a statement of the facts for the information of the public in relation to this blockade, and especially in relation to the herds that passed over the trail through your range, in order to determine what herds, if any, probably infected the trail and occasioned the outbreak of splenic fever among the native cattle on ranges contiguous thereto.

Very respectfully,

H. M. TAYLOR,
Agent United States Bureau of Animal Industry.

Mr. N. J. DILLON,
Foreman Cattle Ranch and Land Company, Camp Supply, Ind. T.

DENVER, COLO., *October* 5, 1885.

DEAR SIR: Your favor dated September 20 to hand. In reply will say that until September 10 last I was foreman for John Clay, jr., of Chicago, manager of the Cattle Ranch and Land Company, limited, whose range is on the west end of the Cherokee strip near Camp Supply, and through which the Dallas trail passes on the south side. I was on said range at the time the Texas herds were blockaded, and am familiar with most of the facts connected with said blockade. About June 10 the first two herds that passed over this trail came up from Wichita Falls, Tex., and I understood that they were from the vicinity of Victoria, Tex., on the coast, which is conceded to be an infected district. There have been but few deaths on this range during the

summer months, in fact, fewer than I have ever known of on any range at this season of the year, and I do not know of a single case of my own knowledge where any of the native cattle died of splenic fever on this range, which I was constantly passing over.

I had some experience with splenic fever in Colorado, in the summer of 1884, from cattle which were shipped to La Junta, Colo., from Southern Texas. While I worked with cattle in Colorado for a number of years, I have never known of a case of splenic fever from cattle driven all the way from their native ranges to Colorado. This fact leads me to conclude that if any cattle have died of splenic fever on the range of the Cattle Ranch and Land Company, limited, this summer, it must have been occasioned by cattle that were shipped from Southern Texas to Wichita Falls and driven over the range as stated. These herds were piloted by me through this range over what is known as the Dallas trail, and my actions in the premises were sanctioned by Mr. John Clay, jr.

Yours, very truly,

N. J. DILLON.

H. M. TAYLOR, Esq.,
Agent United States Bureau of Animal Industry, Las Vegas, N. Mex.

DODGE CITY, KANS., *June* 9, 1885.

To the owners or men in charge of through Texas herds:

The men owning ranches along the designated trail by the Dallas Convention are perfectly willing that all through herds shall pass over said trail, but request that said herds be confined to said trail, and therefore urge upon and ask you to confine all herds strictly to the designated trail.

They have employed Mr. M. S. Culver to pilot herds over said trail and render you any other assistance he can. I hope, therefore, for the mutual benefit of all parties interested, you will comply with the above request.

Yours, very respectfully,

R. M. WRIGHT & CO.

DODGE CITY, KANS., *June* 17, 1885.

DEAR SIR: From advices I have just received we will not keep any one on the trail except Fondo, Norr, and two ∞ men, who will be there in a few days, so you will please come in on receipt of this.

Yours, truly,

C. W. WILLETT.

M. S. CULVER, Esq.

DODGE CITY, KANS., *June* 9, 1885.

To the owners and men in charge of through Texas herds:

Since my arrival here, I learn from the men owning ranches along the trail designated by the Dallas Convention that they are perfectly willing that herds shall pass over said trail, and have gone to the expense of sending men to pilot herds over said trail, but request that all herds shall confine themselves strictly to said trail. I therefore urge and ask you one and all to do so, and to extend to these ranchmen every courtesy you can, and I am confident you will receive nothing but fair treatment in return. It is but right and proper that we should follow the trail as designated, and use every effort in our power to preserve peace and harmony among our fellow stockmen. I therefore hope that each and all of you will comply with the above request.

Respectfully,

JOHN T. LYTLE.

WASHINGTON, D. C., *July* 11, 1885.

SIR: In reply to your inquiries, I have the honor to state that W. A. Towers and Thomas A. Lee do not represent the Colorado Cattle Growers' Association in the position they have taken in their telegram of 1st instant to Secretary Lamar. I am a member of that association and was present at a recent meeting of the association in Denver, Colo., at which a resolution was unanimously adopted expressing the sense of the association that owners of healthy cattle had a right to drive them over the public domain. This resolution is in direct opposition to the position taken by Towers and Lee in obstructing the drive of cattle through their ranges in the neutral strip.

While I am a member of the Northwestern Texas Live-Stock Association, embracing all Northern Texas, and am familiar with the names of all live-stock associations in Texas of which the public have knowledge, I must say that I never heard of the Northern Texas Association, and that Towers and Lee do not, in their opposition to the drive over the Dallas trail, represent any of the known live-stock associations of

Texas, for the reason that all Texas associations had representatives at the Dallas convention, which established the trail which Towers and Lee are endeavoring to obstruct, and it is not reasonable to suppose that any of these Texas associations rescinded their action and selected Towers and Lee to undo the work they participated in doing at the Dallas convention.

As to Towers and Lee representing any stock growers' association in Missouri, I would state that I have a personal acquaintance with the principal stock growers of Missouri, and that the views they have expressed to me are in direct opposition to the position taken by Towers and Lee; and further, I do not know of any stock growers' association in Missouri, except breeders' associations, and they are not interested in the question at issue.

As to Messrs. Towers and Lee representing the Kansas and Indian Territory Associations in the premises, I will state that I believe that they do represent those interests in those associations which have banded together to stop the drive from Texas.

As to the statement of Towers and Lee that the herds being driven up are infected and the owners know it, I would state that I have just received a letter, which I indorse, from the Hon. James M. Wilson, treasurer of the Colorado Cattle Growers' Association and director of the German National Bank, Denver, Colo., in which Mr. Wilson states that cattle which Towers and Lee are seeking to stop are from Crockett, Edwards, Nolan, and Mitchell Counties, in Texas, and are perfectly healthy, and are as free from infection as cattle belonging to Towers and Lee in the neutral strip. I also indorse a telegram from John T. Lytle saying that the cattle are healthy, and asking that inspectors be sent to establish the fact that the cattle are free from infection. Mr. Lytle is a member of the executive committee of our National Cattle and Horse Growers' Association, and is a gentleman of large wealth and of the very highest standing, and his statements will be believed all over the West, in spite of all allegations to the contrary.

As to the health of the cattle in question and their freedom from infection, I would state that Dr. George C. Faville, veterinarian of the Colorado State Sanitary Board, went to Texas and inspected the cattle and gave them bills of health, and Dr. Faville's standing as a veterinarian is second to none in the West.

As to Towers and Lee's statement that there would be no opposition to the cattle being driven up over what they term the old trail, but that owners of cattle are seeking to scatter herds through their pastures, &c., it would appear to persons ignorant of the facts that Towers and Lee were very fair and were not seeking by pretenses to obstruct the drive. But the facts are that the trail they say is open cannot be used, as it leads to Kansas, where Towers, Lee, and associates have placed a Chinese wall on the drive, and the established trail which they are obstructing leads to Colorado, where cattle can find outlet to destination. When these facts are considered it will be apparent that Towers and Lee are opposing the drive from selfish motives, and that they are making a pretext of disease to interfere with inter-State commerce in healthy cattle. As to owners of herds scattering their cattle, as alleged by Towers and Lee, the statement is ridiculous. All cow-men know that the drive will be confined to the established trail, and the herds will be passed through to their destination in the direct course.

As to the position assumed by John Clay, jr., of Chicago, in telegram to you dated July 10, 1885, expressing willingness for cattle to go up old trail through his leased land in Cherokee strip, but objecting to the drive over trail indicated by Dallas convention, it is plain he is opposed to the movement of the cattle north from other motives. Otherwise, why is it that he is willing for the old trail to be used, which runs through center of his range a greater distance than the Dallas trail, which simply crosses his range at south end for 7 miles? If the 7 miles drive on the Dallas trail is so injurious to him, why is it that the longer drive over the old trail is not objected to? Simply because he knows that the old trail cannot be used, and his willingness for it to be used is a pretense. Clay's expressed desire to leave the adjustment of this matter to the courts is impracticable, because the time that would be occupied in adjudication by court would render it too late to admit cattle being driven to northern ranges this season. As these cattle cannot be taken back to Texas, and as they cannot pass the coming winter and live where they are now held, citizens of Texas, Colorado, Missouri, Ohio, Connecticut, and other States are liable to lose over a million dollars by the perishing of the cattle on account of the wrongful and illegal obstructions sought to be placed in the way of their movement.

A trail has been opened up at large expense from the neutral strip north in Colorado along the Kansas line, by leases of lands and water rights from individual owners, and the people of the country rely on the friendly offices of the administration to give the protection to these herds that has formerly been accorded to them by previous administrations.

In conclusion, I will say that every man, woman, and child in the United States is interested in the protection by the Government of the movement of cattle from the breeding grounds of the South to the fattening ranges of the North, for the reason

that cattle gain from a fourth to a third greater weight on the northern ranges, while the per cent. of calves saved on the southern ranges is fully a third greater than on the northern ranges, and the price of beef is largely dependent on the maintenance of this inter-State commerce in cattle from Texas to Montana.

Texas cattlemen have already this season suffered a loss in the temporary depreciation of their cattle of over $5 a head by reason of the opposition of Towers, Lee, Clay, and their associates to the movement of cattle to northern ranges; and estimating that Texas has 8,000,000 head of cattle, it will be seen that a shrinkage of $40,000,000 has taken place, at a time when there has been a general stringency in the money markets, and when they could least afford to stand the loss. They have submitted to this great hardship with remarkable patience and forbearance; but it is too much to expect them to submit to the further injustice that is sought to be done them, when it is considered that the people who are ruthlessly attempting to injure them are trespassers on the public domain that they are seeking to monopolize, and that they do not pay any taxes to support the Government of our country.

Very respectfully,

H. M. TAYLOR,
Agent United States Bureau of Animal Industry.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture, Washington, D. C.

CATTLE VALUES SYMPATHETIC.

In some portions of the range country a mistaken notion has prevailed in regard to getting cheap southern cattle. It was argued by some that if the price of young cattle in the South was depressed, the margin to the drover or the purchaser from the North who went South to buy would be increased by the amount of the depression in the South. Results have proven this a fallacy. The blockading of the drive the past season, and the quarantine againt Texas cattle from below the thirty-fourth parallel, caused a shrinkage of over $5 a head on all classes of Texas cattle, but in sympathy with that decline values have gone off equally as much all along the line from Texas to Montana. And this will always be the rule. There is a sympathetic connection between values of any article of traffic that is as certain and true as the magnetic needle. Commerce is argus-eyed, and at once discovers the means of restoring any temporarily disturbed equilibrium in trade or values. The cattle industry of the whole country is interested in maintaining prices at all points. Temporary gains might be realized by remote sections, where the supply was inadequate to the demand, by, for the time being, disturbed values; but the reaction always comes, and when it does come it works permanent hardships. The true policy of Montana, Wyoming, Colorado, New Mexico, Texas, and other cattle countries is to combine with each other, and, through compromise and comprehensive intelligence, work out a system of co-operation based on honor and justice.

RANCHMEN AND FARMERS—THEIR INTERESTS MUTUAL.

It is evident that every year brings the interests of the ranchman and farmer nearer together, and that they are equally important factors of a necessary system. The steadily advancing value of farming lands necessarily makes the life of a steer from calfhood to maturity a period of expense to the farmer, which materially reduces the profit when the animal is ready for the shambles. On the other hand, while the ranchman in the breeding sections brings a steer to the age of three years at a comparatively small expense, he has no facilites for obtaining that additional profit to be realized from the hardening process of feeding, and each acting independently, is deprived of the advantage and profit that would be realized by operating together for mutual profit and benefit.

When the time shall come that breeding and feeding cattle are recognized as enterprises that are separate and distinct, the business of producing beef will have reached a point where the profits are equitably enjoyed by the ranchman and farmer, and the alliance between them be productive of pleasure and profit to both.

LIVE-STOCK PAPERS.

Newspapers are everywhere recognized as a power in the land, and their influence is as wide as the earth. Without them the wheels of progress would be clogged, and many of the successful avenues of trade closed. No branch of business has greater need of well-balanced and progressive newspapers to aid it than that of raising cattle and horses. Stockmen and their producing fields are widely scattered, and their only means of rubbing against each other and comparing notes and experience is the press. This is a progressive age, and from results we learn most. New conditions are daily forming, and practical experiments are everywhere being made. From an intelligent press is constantly emanating all that is of value with reference to this daily change. Thus results, and all that they imply, are given to the world to be acted upon from practical standpoints. Newspapers are valuable to those they are intended to serve in proportion as they receive support. It requires money, brains, and hard work to make a good paper, and the man who brings these to bear on his business should be liberally rewarded. A live, progressive stock journal in any given section of the country stands to the stock business in the relation of an insurance on the money invested in stock. It is always on guard in the stockmen's interests and always fighting his battles. No business man thinks for a moment of doing business without securing a policy on his entire establishment, and pays an annual premium of from 2 to 4 per cent. of the money invested. So the stockman should encourage by the most liberal patronage every stock paper that serves him. There are educated, experienced, well balanced men publishing papers wholly in the interests of the stock industry, and who are weekly sending out brave utterances in its behalf, who are simply making a living. They are doing a work that is worth millions of dollars to the industry, yet many give them no aid or comfort beyond the borrowing of their paper from some more thoughtful neighbor who is a subscriber. Stockmen, if they desire prosperity in their business, should go to the relief of their stock papers and enable them to mold public opinion in such a way as to give them the protection to which they are entitled.

LIVE-STOCK ASSOCIATIONS, NATIONAL, STATE AND LOCAL.

The history of every department of trade or business calling throughout the world demonstrates the importance and necessity of associated effort in order to advance the interests of all concerned. Governments are created and administered on this principle, and society could not exist without recognizing the community of interests. The cattle ranges extend from the Gulf of Mexico on the south to the forty-ninth parallel on the north, and from the Sierra Nevada Mountains on the west to the valley of the Missouri on the east. Over this vast area, about twelve hundred miles square, there are varied and peculiar local conditions, caused by physical conformations. Growing out of these particular local conditions different systems of handling stock are necessarily in vogue. The system practiced in any given locality, while eminently

suited thereto, may be wholly unsuited to another section. Therefore, in order to secure harmonious and profitable local action, local organization becomes a necessity. The rules and orders of the local association, covering but a small area, are easily made satisfactory to all those interested and readily adapted to serve the best purposes.

But the State or Territory covers a wide range of country, and one set of statutes must govern all the people. In order that there be no friction, representative men are sent up from all parts, and the wants of the whole properly considered. So with the stock interests. In order that local regulations be not offensive and detrimental to other sections, and for the purpose of a wider field of associated labor, State and Territorial organizations become necessary.

These bodies, being composed of practical men from every locality, can prepare rules that will enable all to work in harmony and for the general good. They can influence and shape legislation so as to protect all alike, adopt such measures as will guarantee the safety of their herds, and accomplish all at the minimum of expense. Therefore, every State and Territory should have its local and central associations, and every man engaged in the business should be a member.

But the necessity of the work does not stop here. The world over, human nature as a whole is alike, and selfishness is a common factor. As each local association has some conditions peculiar to itself, and can only work with its neighboring organizations by virtue of compromises, so the various State and Territorial organizations are sometimes found to be working in harmony with local connections that are highly detrimental to the welfare of other States. The wisest laws and those promotive of the greatest good have only been enacted by means of compromises. The greatest good to the entire stock interests of the country can only be secured by intelligent discussion, grave deliberation and a willing spirit of compromise. To this end the stockmen of all sections should meet in annual convention as a national body, under such rules and regulations as will insure to each and all the benefits to flow from individual membership. As a whole the stock interests of the United States are of such magnitude as to demand from all of the people the most careful consideration, and from the law making power of the Government the fullest protection.

Scattered and unorganized as these interests have been in the past, they have received but little consideration from the powers that be, and in consequence suitable laws are conspicuously absent from the statutes at large. As an industry, the stock growing business is one and the same from the Gulf to the British line, and there exists no reason why the whole body of men engaged in the calling should not meet and agree upon such measures as will be productive of the common good, and at the same time compel the recognition and respect of the law making powers.

THE PAYMENT OF ASSOCIATION DUES.

Following out the ideas above set forth, a word may be said about the payment of association dues. The associations and the newspapers work hand in hand; and the combined influence of the two has cleared the bulk of the range country of the cow thief that formerly gave such trouble to honest ranchmen, and by virtue of the security thus gained largely increased stock values. With no certainty of ever again seeing the cattle turned loose on the range, capitalists were not disposed to invest, and stock herds were a drug in the market. But after the forma-

tion of associations and their active support by the press, the thieves had to go.

This made cattle investments as safe as other recognized legitimate securities, and moneyed men at once began to take hold of the business. This equalized values on all classes of cattle, and soon had the effect of bringing stock-raising to the front as a leading and profitable calling. With the prompt payment of all dues and assessments to the associations, and a doubling up of newspaper patronage, stockmen are still paying less than one-fourth the amount they would have to pay for insurance on a like investment in any other personal property, and the insurance would be no more complete nor absolute.

CATTLE COMPANIES—HOW AND WHY ORGANIZED.

The range country east of the Rocky Mountains covers an area of open country 200 to 300 miles east and west, reaching from British America south to the Gulf of Mexico. Going south the trend of the mountains is to the west, and the plain country on the thirty-sixth parallel is not far from 600 miles east and west. Over this wide expanse of almost treeless plains the cattle roam at will, and are frequently found hundreds of miles from their home range. Freedom of action is the insurance on their lives, for they walk in front of the blizzard until they find shelter or the storm abates. When spring comes a small herd is found scattered over an area of perhaps hundreds of miles. They must be gathered and the calves branded. To facilitate this work the round ups have been instituted, and the spring hunt for cattle means an organized army of cowboys scouring the whole country. Mess-wagons are loaded with provisions, and a cook employed who drives the four mules or horses, and cooks for the ten or fifteen cowboys attached to the mess. These boys are sent by the ranchmen in ones and twos with from half a dozen to twenty or more wagons, depending upon the number of cattle they represent. The man with three or four hundred head of cattle finds them as widely scatterred as are the ten thousand of his neighbor. In order to gather his cattle he must have a representative with the outfits in the various directions the cattle drift. This creates an annual expense that is beyond the limits of the purse of the small holder, while to the owner of thousands of head it is but a small per cent. on the number of animals gathered. Thus the round-up system, while it is perfect in itself and enables ranchmen to find all of their strays, and return them to the home ranch, is too expensive for the owner of a few hundred cattle. It costs as much to run a bunch of 500 cattle on an open range, and find all of them in the spring, as it does to run 3,000. And it costs virtually as much to run 3,000 head as it does to handle 10,000. Under these circumstances and conditions there is a present and growing tendency among small operators to pool their issues and organize cattle companies out of their combined herds. By this means the annual expense per capita is reduced, in many instances, from $3 to less than $1.

The large companies are made up, as a rule, of combined capital from the East, taken in small blocks, and very frequently the funds so invested are widows' savings and orphans' legacies. Hence they appeal in strong terms to the public for the same kind and degree of protection that would be accorded to them if invested in any other class of business or securities.

CONCLUDING REMARKS.

The range cattle industry of the West is in a fairly prosperous condition, but it has passed through a season of trying ordeals. The quarantine against the South, and the blockade of healthy cattle in the Indian Territory, caused both losses and "bad blood." The removal of cattle from the Cheyenne and Arapaho Indian reservations wiped out a considerable sum of money in the forcing of unripe cattle on the beef markets, and in the expense incident to removal. The President's order for the taking down of all fences on the public domain, and the general tone of the eastern press against the occupancy of the public lands by cattle owners, caused a feeling of distrust to spring up in the minds of those who were contemplating investments in ranches and cattle, lest there might be other troubles to follow. The actual breaking out of pleuro-pneumonia in several localities in the country west of the old and known disease centers, created a doubt as to the permanent security of cattle investments on the range against disease. This caused a few timid persons to desire to sell out and retire from the business. All of these things, combined with an unusually stringent money market, brought about a general lowering of prices throughout the West and a shrinkage in taxable values. But to-day a healthy reaction has set in and a feeling of hope for the future is everywhere manifest. It is believed that sufficient interest is being taken by the people of the East to induce them to more fully investigate the situation in the West, which means their conversion.

When they realize the fact that the arid regions of the plains are alone suited to grazing purposes, and that from 40 to 50 acres are required to support one cow or horse; when they understand that at least one-third of the beef supplies come from these same arid plains, and that its withdrawal from the markets of the world means greatly advanced prices to them, when they ascertain, in a word, that their best interests are to be subserved by "standing in" with the West, then will they withdraw all the apparent opposition lately manifested, and with might and main assist by every proper means to secure the necessary national legislation to give permanent tenure and protection to the cattle industry. It is also believed that Congress in its next session will come fully and squarely to the relief of the industry, and give all that is reasonably asked for. With such a condition brought about, confidence and prices will be fully restored, and the money centers will turn loose their surplus capital for investment as opportunity occurs. With absolute protection against disease, such as the proper laws will give, if their enforcement is placed in the hands of both scientific and practical men, the future prosperity of the industry is assured. Harmony and united action on the part of the entire range interests will certainly secure the accomplishment of these very desirable conditions.

Respectfully submitted.

H. M. TAYLOR,
Agent Bureau of Animal Industry.

LAS VEGAS, N. MEX., *October* 9, 1885.

THE LIVE-STOCK INDUSTRY OF COLORADO AND THE TERRITORIES OF THE NORTHWEST.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture:

SIR. I have the honor to submit the following preliminary report of the results of my investigations of the cattle industry in the State of Colorado and in the Territories of Dakota and Montana. I would state that the information contained in the following report was obtained by means of circular letters addressed to many persons engaged in raising cattle in the above designated territory, and from personal interviews with the leading stockmen and others interested in the cattle industry, and from records and statistics accessible to me. The figures given are perhaps as accurate and reliable as can be obtained without a careful census.

The number and value of the animals in the above-named State and Territories at the close of the year 1884 were about as follows:

Locality.	Number of cattle.	Estimated value.
Colorado	1,224,310	$38,542,800
Dakota	484,312	13,500,000
Montana	823,648	24,700,000
Total	2,532,270	76,742,800

The breeds most in use in Colorado, Dakota, and Montana are the Durhams, Herefords, and their crosses with the Texans.

In Colorado there are 48,754,600 acres, or 73½ per cent. of the State, devoted to pasturage. The returns from Dakota Territory are not regarded as sufficiently accurate for use, and I will not hazard an estimate as to the number of acres devoted to grazing in this Territory. The returns from the Territory of Montana would indicate that there are 68,666,000 acres, or about three-fourths of the Territory devoted to the grazing of cattle.

The most acceptable dairy breeds for Colorado are Jerseys, Holsteins and Alderneys; and these seem to be the most acceptable breeds for both Colorado and Montana. The number of cattle devoted to dairy purposes in Colorado is given at 60,450.

The annual increase of cattle in Colorado is 25 per cent., and the annual consumption 50,000 head, in round numbers. The annual increase in Dakota is 40 per cent., and in Montana 41 per cent. The breeds most in use are the Durhams, Herefords, and their crosses with Texans, and those best adapted to beef production are the Durhams, Herefords, and Polled Angus. The ages at which these animals are sent to market range from two to six years.

These cattle are shipped to market by railroad, generally on common stock cars. It would be a great improvement to ship these animals on cars with air-brakes, patent couplings, and suspension trucks. The cost per head of sending them from Colorado to Chicago varies from $5.75 to $10.25, or an average of $8.79; to Kansas City, $3.75 to $7.25, or an average of $5.35. The cost from Dakota is $5.87, and from Montana $8.

In Colorado the cost of feeding an animal on the range until it is fit for beef is $8.40. I cannot give the cost for the production of an animal in Dakota, but the estimated cost for Montana, as given in the circulars of inquiry returned to me, show this cost to be $4.50. These figures I regard as too low.

The condition of the cattle on the ranges as a whole has been good all winter. The modes of shelter and protection are barns, sheds, and wind-breaks on the farms, and ravines, bluffs, cañons, timber, and other natural means of protection on the ranges. In Colorado the loss for want of shelter is 4½ per cent. This loss varies in this State from 2 to 10 per cent., according to location and season. The loss of flesh during the winter from this cause is 12 per cent. In Dakota the loss is 7½ per cent. per annum, and in Montana 6½ per cent. In Dakota the loss of flesh during the winter is 17½ per cent.

The various diseases, contagious and otherwise, to which Colorado cattle are liable, are black leg, ergotism (known in some localities in Kansas as foot-and-mouth disease), and Texas fever. This last-named disease prevailed to but a limited extent except during the past year, when it caused a very serious loss among cattle in some localities. Black-leg and Texas fever occasionally prevail among cattle in Dakota, but to no very great extent. The only fatal disease mentioned as existing among cattle in Montana is black-leg, but this never prevails to any great extent. I have not been able to secure correct returns as to the number of Texas cattle brought into Colorado, but the loss caused by their mingling with native stock is estimated at $237,500. The only protection against this disease (Texas fever) would seem to be in good quarantine laws.

The annual increase of cattle in Colorado, on the basis of the census of 1880, is 60 per cent. This includes the animals brought into the State from other States and Territories, as well as the natural increase. On the same basis the annual increase for Dakota is 54 per cent., and that of Montana 84 per cent. This increase also includes importations as well as the natural increase.

TEXAS OR SPLENIC FEVER.

Colorado has been comparatively free from Texas fever, but in 1884 our cattle interests suffered a very serious loss from this disease. The estimates of these losses are based on information obtained from parties familiar with the facts, and who were cognizant of the results from personal observation on the range. It did not kill in all cases, but many of the infected ones recovered; and in such cases it prevented the diseased animal from becoming fit for fall beef and jeopardized its chances of surviving the winter.

The fever first made its appearance in Colorado at La Junta, about the 1st of August, and continued its ravages until heavy frost came. There is one party who estimated his individual loss in 1884, from Texas fever alone, at $50,000, but from disinterested parties in his vicinity I am informed that this statement is somewhat exaggerated; but no

doubt he met with a very serious loss. He lost 700 to 800 head in his pasture, besides some on the range. The singular feature of this disease is that the Texas cattle appear apparently healthy, and impart it to the native cattle they come in contact with on the range. The animals that take this disease from the Texas cattle do not impart it to others, and in no case have we been able to trace any infection from Texas cattle that came over the so-called "trail." All the Texas fever brought into Colorado came in or through cattle brought in on the cars, and mostly from Texas, although some cattle from the East died with the fever. They were infected at points at which they were taken from the cars in transit and fed in yards that had been occupied by Texas cattle. All the cases of Texas fever that occurred in Colorado last year have been traced to Texas cattle that came up on cars.

It seems that Texas cattle coming over the "trail" go through a process of acclimation that destroys the fever germ so far as Colorado is concerned, and some of the cattle that came by cars did not impart the infection; but, as a rule, they came from the healthy portion of Texas, or where the infection does not exist. There is one case where a lot of Southern Texas cattle came in by cars that did not introduce the fever; but on investigation I find that they were detained in Texas by a washout on the railroad about six weeks, and they undoubtedly went through a sort of acclimation or quarantine measure that eradicated the disease.

QUARANTINE REGULATIONS.

As a preventive of this disease, and all other contagious diseases, we have now bills introduced into our legislature for a good quarantine law, which will be passed very soon, and go into immediate effect; also one especially to guard against Texas fever, which also, no doubt, will become a law. Heretofore we have been entirely without any laws on contagious diseases or of a quarantine nature in this State. So far there is no known remedy for Texas fever that has been found to be effectual, except severe frosts.

FEEDING.

Our farmers are turning their attention to feeding beef for the spring and early summer markets, and the past winter they have been and are feeding about 20,000 head in the State. Alfalfa is one of the principal feeding commodities. Hay, the various grains, roots, &c., are also used. On the range they are also turning their attention in the winter season to feeding their weak and thin cattle wherever they can cut hay for them; also, to keeping up their bulls in many cases so as to bring in their calf crop after the spring storms, say from the 20th of April to September.

BEEF PACKING, &C.

The question of beef packing and canning in Colorado has had the attention of the Denver Chamber of Commerce and Board of Trade, as well as the Colorado Cattle Grower's Association.

IMPROVEMENT IN TRANSPORTATION.

I have taken much pains to investigate the mode of sending our range cattle to market. I believe it will be a great benefit to make the improvement in stock cars suggested by me. All shippers and railroad

men claim that the greatest injury done the animals while in transit is caused by the sudden starting and stopping of the cars, which results in throwing the cattle down, jamming, and bruising them. Owing to the wild nature of our range cattle, unused as they are to being handled or stall-fed, the so-called parlor or stall cars will not be as beneficial to our western cattle as they may be to the cattle of the East.

LOSS AND DAMAGE BY SHIPPING.

The loss by shrinkage is about 100 pounds per head in shipping, and the damage averages on many thousands shipped one and a half head per thousand in killed and damaged.

AMOUNT REQUIRED TO SUPPORT ONE ANIMAL

The amount of acreage it requires to support one animal on the range in this State is 36⅔ acres on the average in ordinary seasons. The reports are from 13 to 100 acres, according to locality.

FENCING.

In regard to fencing the public domain, it is generally admitted that it would be a detriment to the cattle industry of Colorado.

There is a difference of opinion when it comes to fencing. For beef pastures some are in favor of it, and others are not; but all agree that the fencing of small tracts for horse and bull pastures, and to protect what is called hay lands, would be a great benefit to the cattle industry of the State.

HORSE INDUSTRY.

The number of horses in this State is estimated at 148,863, and they are valued at $9,427,990. The quality is being improved very much of late by the importation of animals from the East, principally of Percheron blood, which are crossed with native stock. Our native stock originally came from Texas with the cattle imported from that State, and that class of horses is still used on the range for handling range cattle. The main supply for that purpose still comes from Texas, and are called "cow ponies."

The diseases that horses are liable to in the State are glanders, "loco-weed" poison, and Spanish itch. The glanders is not of a serious nature, and prevails to a very limited extent. The "loco-weed" is quite prevalent in some sections of the State, and horses on the range are afflicted with it quite seriously. It makes them crazy or foolish and finally worthless. It seems to affect the brain; there is no known remedy. Our State Agricultural College is giving it attention, and may find a remedy.

The Spanish itch also is prevalent in some localities among range and cow horses, and is generally introduced through Texas animals that come up from that State with cattle; but there are remedies for this disease, which, when properly applied, are effectual.

SHEEP INDUSTRY.

The sheep interest is not increasing as rapidly as the cattle industry, but the grade is being improved by introducing blooded stock from the East, mostly merinos. The original stock came from New Mexico. In

the southern portion of our State there are still a good many Mexican sheep, but in other portions of the State they are mostly grades.

There are 1,027,841 sheep in the State, and their estimated value is $2,441,122.

Sheep are also affected with "loco-weed" poisoning, and in addition tape-worm and scab. In some localities "loco-weed" has caused serious loss to the sheep owners. I am informed of one man who suffered to the extent of over $3,000 by this poisonous weed. The Agricultural College, as stated above, is investigating the poisonous properties of this plant, and also trying to discover an antidote or remedy for tape-worm which prevails in sheep in certain sections. The scab is not of a serious nature, and has its well-known remedies.

THE HOG INDUSTRY.

This industry has been very much increased and improved the past year by bringing in many animals from the East of the best grades. Our farmers are turning their attention to this industry since it has been demonstrated that alfalfa has good fattening qualities for the hog.

The estimated number of hogs in the State is 70,550, and their estimated value is $529,125. The farmers of the State have some other food for the hog in the way of grain and roots. The future for the hog interests is very encouraging, from the fact that the demand for the hog product in the State is very much larger than the supply.

There has been some hog cholera, so-called, in this State, but the disease has not prevailed to any great extent.

Respectfully submitted.

S. H. STANDART,
Agent Bureau of Animal Industry.

SUPPLEMENTAL REPORT.

SIR: I have the honor to submit the following supplementary report of the result of my investigations of the cattle industry of the State of Colorado and Territories of Wyoming, Montana, and Utah.

The sources from which my information is derived were fully stated in my previous report. I shall make some corrections on my former report, as further investigations have or may dictate, with a view of getting at the facts as near as may be without an actual census.

CATTLE.

The number and value of cattle in the above-named State and Territories at this date (October 1, 1885) are about as follows:

Locality.	Number of cattle.	Estimated value.
Colorado	1,420,388	$42,611,640
Wyoming	1,515,763	55,743,823
Montana	1,200,426	42,014,910
Utah	445,000	12,237,500
Total	4,581,577	152,607,873

Estimated range area in acres, and number of acres required to support one animal on the range and percentage of the whole State or Territory.

Locality.	Per cent.	Area.	Required to support one animal.
		Acres.	*Acres.*
Colorado	73⅛	48,754,600	36⅝
Wyoming	79	49,333,920	32
Montana	62½	58,124,000	27½
Utah	50	26,300,800	40

There are Indian reservations in the above-named State and Territories, especially Montana, that are not fully available for cattle ranges at present, which are included in the above estimate.

The condition of the cattle industry of Colorado so far this year is very good. Owing to the very efficient quarantine laws now in force in the State, cattle have been free from any contagious diseases. There has not been a single case of Texas fever in the State this year. There have been 115,587 Texas and New Mexico cattle (mostly Texans) brought into and passed through the State, and it is estimated that 75 per cent. of them remained in Colorado.

In Wyoming and Utah the breeds most in use are Durhams, Herefords, and their crosses with Texan. The most acceptable dairy breeds are Holsteins, Jerseys, and Alderneys. In Wyoming the number of cattle devoted to dairy purposes is estimated at 8,952. (Data on this point very unsatisfactory.) The number in Utah is estimated at 60,686.

The annual increase in Wyoming is estimated at 28 per cent. The annual increase in Utah at present is very small, and the returns do not warrant an estimate.

As to the annual consumption of cattle in Wyoming and Utah, I have not been able so far to get any reliable data upon which to form an estimate.

Wyoming, in 1884, shipped to Chicago and other eastern markets, 167,000 beeves. The beef shipments from Utah are limited, and the industry depends mostly on her local markets. The reports are not of a nature to warrant an estimate as to her beef products, but it would be fair to estimate her beef crops at 8 per cent., or 36,500 head.

The mode of conveyance to market for the beef crop of Wyoming is by rail and common stock cars, and the improvements suggested in my former reports are fully indorsed by the stockmen of this Territory. The cost per head of sending them from Wyoming to Chicago varies from $6.50 to $9.25 per head. The average is $7.60.

The cost per head for feeding until fit for beef, in Wyoming, is estimated from $6.50 to $12. This depends in some degree on the size of the herd. On the range a large herd can be run cheaper in proportion than a small one. In Montana later reports indicate that the cost per head of feeding until fit for beef, is from $4.50 to $15, as in some localities the cattle are fed on hay more or less during the severe storms of the winter months, the cost depending largely on the location and size of the herd. In Utah the cost on the same basis is estimated by the returns from $7 to $14, the herds being usually small.

The condition of the cattle on the range in Wyoming and Utah at this season of the year is very good. The losses on the range in Wyoming for the want of shelter in the winter of 1884–'85 were governed largely on the kind of cattle and their location in the Territory. In Utah the losses from the above cause were not serious, and are estimated at 5 per cent.

In Wyoming the losses on the range of native or acclimated stock for the past winter is not up to the average. The losses on cattle brought into the Territory from other States and Territories (those from Texas are called "rawhides," and those from the Eastern States "Pilgrims,") the past winter have been very serious in some localities and moderate in other sections of the Territory, the losses depending largely on the condition of the cattle and the season of the year they were turned out on the range. The reports on the losses of "Pilgrim" and "rawhide" cattle show a wide difference, and vary from 3 to 50 per cent., the average being about 21 per cent. Taking the average of all reports on all classes of cattle for the winter of 1884–'85 the loss is $5\frac{1}{10}$ per cent. in the Territory. The reports indicate that the losses on the range for want of shelter for a series of winters will not exceed 5 per cent. per annum.

The annual increase in Wyoming, on the basis of the census of 1880, is 90 per cent.; in Utah, 67 per cent., on the same basis. This includes those brought in from other States and Territories as well as the natural increase.

In Wyoming there is no disease of a serious nature existing among cattle, owing to the very efficient quarantine laws now existing, which were fully and timely promulgated by the Wyoming Stock Growers' Association through its president, Hon. J. M. Carey, and its secretary, Hon. Thomas Sturgis. The Territory has suffered no material loss from contagious diseases up to date, and during the twenty years that cattle have ranged in that Territory there has never existed any contagion or other serious malady. It has been the experience of the cattlemen of the Western and Northwestern States and Territories that there is no cattle disease, contagious or otherwise, indigenous to the country, and with proper quarantine laws enforced, the Western States and Territories can be absolutely protected from exotic or contagious diseases.

IMPROVEMENT IN THE HERDS OF THE STATE OF COLORADO AND THE TERRITORIES OF WYOMING, MONTANA, AND UTAH.

Most of the cattle in the above State and Territories came from Texas originally, and have been and are being improved by the introduction of Durham, Herefords, Polled Angus, and Galloway blood for the range or beef purposes, and the introduction of Holstein, Jersey, and Alderney blood for dairy purposes. At the State, Territorial, and county agricultural fairs you will see as fine animals as there are in the Union in proportion to the number on exhibition, and in many instances their crosses with the common native stock show wonderful improvement.

For purely range purposes, experience has demonstrated that it is desirable that the herds retain a goodly share of native range or Texas blood to preserve the (so-called in the West) "rustling" or self-preservation qualities.

HORSE INDUSTRY.

The value and number of horses in the following-named State and Territories at this date (October 1, 1885), are about as follows:

Locality.	Number of horses.	Estimated value.
Colorado	156, 306	$9, 899, 389
Wyoming	116, 235	6, 974, 100
Montana	124, 804	7, 488, 240
Utah	70, 000	2, 800, 000
Total	467, 345	27, 161, 729

In Colorado the horse industry, as a whole, is very satisfactory. This year there have been 6 head of horses afflicted with glanders killed under the direction of the State veterinary surgeon, Dr. Faville; besides some were disposed of voluntarily by the owners, while others died. I have no reliable data as to the number, but am of the opinion that the total number of animals killed by this disease in the State so far this year will not exceed 30.

The loco-weed poisoning and Spanish itch amongst range horses this year from reports are not nearly as prevalent as last year, still there is no reliable information as to the number afflicted or the losses from either cause. These losses are so small in number as to be of no serious consequence.

In Wyoming the horse industry is in an equally satisfactory condition. The kind of horses most in use are "Texan," or "cow-ponies," used on the range. They are improving their horses by introducing fine-blooded animals from the East and South. Wyoming has many fine horses, and several horse ranches established to breed horses of as fine quality as are produced in the Union.

The only disease of a serious nature which afflicts horses of Wyoming is glanders. Last year the Territorial veterinary surgeon, Dr. Hopkins, under authority of the quarantine laws, killed 33 head afflicted with this disease. This year about the same number have been killed under similar circumstances. There is very little, if any, loco-weed poisoning of horses in Wyoming. I have no reliable reports of anything of the kind in that Territory.

In Montana the horse industry is receiving a good deal of attention, and there are many fine animals in the Territory. They are improving the breed of horses by importation of fine blooded stock from the East. At their Territorial fair held at Helena last August there were many fine animals on exhibition which were a credit to Montana stockmen. The horses most in use are the same as in Wyoming. Glanders is the only contagious disease reported, but the reports are not sufficient to make an estimate. I infer that the disease is not widespread.

There is a report from one locality in Colorado of a disease similar to the loco-weed poisoning. As there is no loco-weed in Montana the cause is a mystery, but it is undoubtedly a weed or vine poisoning of some kind from the symptoms given.

SHEEP INDUSTRY.

The number and value of sheep in the following-named State and Territories at this date (October 1, 1885) are about as follows:

Locality.	Number of sheep.	Estimated value.
Colorado	1,130,625	$2,477,738
Wyoming	1,309,044	2,618,088
Montana	1,000,000	2,250,000
Utah	1,350,000	3,037,500
Total	4,789,669	10,383,326

The sheep industry of Colorado is this year in a very satisfactory condition compared with that of last year. Winter losses were very small. The tape-worm disease is very limited, if any exists (no reports of any). Loco-weed poisoning is reported in some localities, but the

data indicates that it is not so serious as last year, although the reports show that the weed is extending north and east. In the State, on the range, there is the usual amount of "scab" among the sheep, but it is not of a serious nature, has its well-known remedies, and is easily eradicated.

In Wyoming, Montana, and Utah the sheep industry is in a very satisfactory condition, and comparatively free from any contagious disease except the "scab," and this to a limited extent. "Scab" prevails, more or less, on all sheep ranges in the West, but as before stated, it is not serious, and can be easily eradicated.

HOGS.

The hog industry of Wyoming, Montana, and Utah is very limited, an industry indeed that receives but comparatively little attention. These Territories depend largely on the East for the hog product for local consumption, and each Territory imports nearly or quite a half million dollars' worth each year.

In conclusion, I may state that the live-stock interests of the West are in a reasonably satisfactory condition. We need more stringent quarantine laws, and these should emanate from the Congress of the United States, so as to be uniform in their application to all the country. The passage of such laws will be in harmony with the views of all intelligent stockmen of the West.

Respectfully submitted.

S. H. STANDART,
Agent Bureau of Animal Industry.

DENVER, COLO., *October* 15, 1885.

CATTLE TRADE AND DAIRY INTERESTS OF ALABAMA, GEORGIA, ILLINOIS, INDIANA AND OHIO.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture.

SIR: An attempt has been made to give in the following pages, as briefly as is consistent with their proper presentation, some of the more important facts relating to the cattle trade and allied industries of certain of the States lying east of the Mississippi River. In collecting, tabulating, and condensing when necessary, the information relating to the cattle trade, dairy interests, &c., of the States named above, one purpose, but not the paramount one, perhaps, has been to show the character of the diseases afflicting the cattle of those States, and the extent to which they prevailed, and also to give an account of the measures taken, if any, to prevent the spread of contagious and of infectious diseases of animals in or from those States. It has not been deemed advisable to occupy space in the following report with a detailed account of the extent to which pleuro-pneumonia has existed, or of the history of the action taken by United States and by local authorities for its suppression, since a full report of that matter will doubtless be furnished by other writers more competent than I am to make a full and accurate statement thereof.

It is to be regretted that nothing has been brought out by queries addressed to thousands of stock-owners, showing what means have been adopted by transportation or by stock-yard companies to prevent the free movement of cattle afflicted by such diseases, from State to State or from market to market. Several States and Territories have recently enacted laws for preventing the movement of cattle from infected localities in other States or Territories, or from one infected locality to any other locality within their own borders. To some extent such laws have proved inefficient, particularly as relates to the movement of cattle that were likely to spread the germ of Texas or splenic fever. For preventing the transportation of cattle from districts in which pleuro-pneumonia was suspected or known to have prevailed the laws have been reasonably effective.

During the last year ample proof was given that a great change had taken place in public opinion in regard to the nature and extent of the danger threatening the cattle of this country, through the continued existence of contagious or infectious disorders. Not many months ago a large number of the owners of cattle asserted, honestly no doubt, that it was their opinion that no danger from that source existed in this country. Now a very large majority of stock-owners express a conviction that due regard for their own welfare, as well as for that of all who buy or sell cattle or cattle products, requires that such protection shall at once be given as may be necessary to keep their herds free from infection.

Answers made by intelligent and enterprising farmers and breeders, which answers cover every county, and almost every township in the States under consideration, show that with the exception of those caused by Texas or splenic fever, losses of cattle from diseases are so very rare as to be a comparatively unimportant tax upon the cattle industry, as a whole. *Actinomycosis*, locally called lump-jaw, big-jaw, big-head, and snake-bite, seems to be more widely prevalent than any other one malady. Anthrax and abortion have caused some losses, but it does not appear that these have increased more rapidly than the total supply of cattle has grown. The entire loss from the disorders named forms a comparatively small percentage of the whole supply of cattle. Upon the whole, there can be no doubt that if the few localities in which dangerous contagious diseases exist can be properly managed, the production of beef, milk, butter, and cheese will continue to be the most uniformly and generally profitable of all legitimate farming operations.

Although it has long been acknowledged that the raising of live stock is more profitable than the growing of grain or other farm products, the production of beef, milk, butter, and cheese has not increased as rapidly as the population of this country, as a whole, nor of the States represented in the following report. The rate of increase of cattle is limited, but the supply of cattle in the United States might be enlarged much more rapidly than it has been, doubtless to the great advantage of all concerned, if people could be induced to use such means as are at their command to accomplish that purpose.

ALABAMA.

Alabama offers to the stock-grower many advantages. Of the lands within the borders of that State four-fifths are uncultivated, and on these lands grow many varieties of grasses and forage plants capable of affording abundant sustenance to domesticated animals. Some of those grasses are scarcely surpassed by any others in value as food for cattle. Three large rivers and innumerable smaller streams furnish a copious supply of pure, clear water that never fails. The climate is mild and without those extremes of temperature that make stock-growing often unpleasant, and reduce the profits thereof, in other regions. The domestic animals of Alabama have been quite generally exempt from epidemic diseases, and the outlay necessary for proper caring for cattle and other live stock in that State is very small; yet stock growing received comparatively little attention from owners of lands in Alabama, until within a few years. Now, however, considerable interest is shown in the work of improving the quality of the live stock within the State. For that purpose a considerable number of purely bred animals of great value have been taken to Alabama. Bulls of high breeding have been imported from the North to increase the value of the cattle, especial attention having been given to the work of improving the butter-making and milk-producing capacity of the stock. Jersey cattle have been imported in greater numbers than have any other purely-bred animals. This work of improvement would doubtless have been carried on more rapidly had not the effects of war retarded the movement, which now promises to go on at a constantly accelerating rate, until the cattle of this State shall rank as at least equal, if not superior, to those of any other State in the Union, in value, as butter producers. It is possible that the improvement of stock would go on more rapidly still if it were

not that cattle taken from places north of Alabama to that State are quite likely to suffer from a malady known by several names, that most generally recognized being "acclimating fever." A gentleman writing from a neighboring State suggests another cause that may retard the development of the cattle interests of Alabama, when he says: "We never have diseases of any kind among our cattle, and are a little reluctant now to introduce cattle from abroad for fear we will get diseases also."

GRAZING LANDS.

Of 33,035,600 acres of land in Alabama, some 18,855,334 are included in farms. Of the farms only 6,375,706 acres were shown by the census of 1880 to be in cultivation, and 241,508 acres of those farms were in permanent pastures, permanent meadows, or orchards and vineyards. Of the farms 72,215 were occupied by their owners; 22,888 were let for money rental; and 40,761 were worked for a share of the produce. There were within the State 10,430,727 acres of unimproved woodland and forest, and 2,048,901 acres were unimproved or abandoned "old fields," not producing wood. The United States Government still held 2,548,950 acres which, excepting mineral reservations, were open to entry under the provisions of the homestead and other land laws of the country. Railroad companies then held about 1,500,000 acres of land, much of it of good quality for grazing or for cultivation. As the laws of Alabama do not, except in a few limited districts, require owners of live stock to confine their animals, it will be seen that there are in that State some 26,500,000 acres of land open to and available for grazing purposes.

The general configuration of the State is described as being an undulating plain, the mean elevation of which above the sea is not far from 600 feet. In the northern and eastern parts the surface rises above that altitude, and in the south and west sinks below it. The area having a general elevation of more than 600 feet is contained within the segment of a circle having Chattanooga for its center, with its arc extended from Columbus, on the eastern line of the State, to the western boundary of Alabama. In the northeastern part of this region appears the Appalachian range of mountains, the axis thereof lying from northeast to southwest. The Commissioner of Agriculture of Georgia says in regard to this region:

> There is thus a general slope away from this elevated region toward all points of the compass, from southeast around to northwest. The mountains of the State rest upon this high land, and often reach an elevation above it of 1,200 or 1,500 feet, or 2,000 to 2,500 feet above sea-level.

The mountains of Georgia are in the eastern part of the northeastern quarter. Some of the highest lands in the State are southeast of the valley of the Coosa; there the mountains rise in some places into rugged and sharp crests. To the west and northwest of the Coosa the mountain tops frequently form broad table-lands, separated by long and narrow valleys. On these table-lands the grazing is often good. Northward from the Tennessee such table-lands are cut by erosion into detached peaks, the tops of which are level, or nearly level, and the intervening valleys are narrow and tortuous. In that part of the State lying south of the thirty-third degree of north latitude there are no mountains. The country slopes gently toward the Gulf, a broad and fertile plain, the lower part of which is nearly level. In the counties of Mobile and Baldwin the surface descends almost to the level of the sea, ending in salt marshes.

CLIMATE.

The climate of Alabama appears to be peculiarly favorable to the rearing of cattle at a small cost. The annual mean temperature of the State is about 64°.58 F. In the spring the mean is 63°.9; in summer, 79°.5; in autumn, 64°.5; and in winter, 50°.4. About the latitude of 32° 30′ north, the last frosts of spring appear about the first half of April. Upon the subject of climate Judge E. C. Betts, commissioner of agriculture of Alabama, says:

> The most potent influences which determine climate are latitude, or distance from the equator, elevation above tide, configuration of mountain chains, proximity to the sea, and the direction of the prevailing winds. In all these particulars the position of Alabama is favorable for a temperate and uniform climate.

The prevailing winds in autumn and winter are from the northeast and the northwest; in spring and summer from the southeast; and for the greater part of the entire year they come from the southeast and the south.

The rainfall of Alabama averages 55.04 inches. Of this 16.37 inches falls in winter; 13.86 inches during the spring months; 14.07 in summer; and 14.70 inches in autum.

GRASSES AND FORAGE.

Of grasses, Alabama has some one hundred and fifty species. About fifty of these are of considerable value for grazing purposes. It is claimed by the authority quoted above that an abundant supply of hay can be obtained in this State with less labor than can a large supply of any other product. The grasses that spring up spontaneously in wet and and in waste places, and those which follow crops of small grain, afford a considerable quantity of hay of good quality, so good, indeed, that the gentleman named, to whom I am indebted for much valuable information, declares that this hay is almost always better than that which is imported. "Several species of clover are found growing wild," he writes, "and furnish excellent pasturage all over the State, and the best varieties of red clover are very generally grown in the northern parts, constituting the staple forage crop of those regions."

In the report upon the agricultural grasses of the United States issued by the Department of Agriculture at Washington, in 1884, the native grasses named as being the most commonly found in Georgia, Florida, Alabama, Mississippi and Louisiana, and having value for forage, are crab grass (*Panicum sanguinale*), crow-foot (*Eleus indica*), the several plants called brown sedge and broom sedge, Bermuda grass (*Cynodon dactylon*), Mexican clover (*Richardsonia scabra*), tick trifoil or tickseed, and nimble will. Crab grass is extensively cut for hay, and some crow-foot is cut, as are also some of the coarse grasses and sedges of the swamps.

Notwithstanding the fact that these plants afford pasturage and hay so useful in quality and generous in quantity, comparatively few cattle are kept, and prices of hay range from $7.50 to $15 per ton in the southwestern part of the State, where wild land is reported as being worth from 50 cents to $1.25 per acre, and where hay may be easily imported by Gulf or by rail. In the northeastern district, where sedge, pea-vine, and "beggar louse" grow profusely on wild lands, and where timothy, herds-grass, and any other kinds sown furnish forage, the price of hay rises to $20 per ton. In that district, however, especially in the counties of De Kalb, Jackson and Marshall, very little hay is made

for sale. Each farmer cuts enough for his own needs, but has little if any to sell. Throughout most of the northern part of the State, hay is quoted as ranging in price from $10 to $15 per ton—most correspondents giving the higher figure named as the current rate. Some, at least, of the hay sold in the northern counties, possibly throughout a considerable part of that portion of the valley of the Tennessee and from Illinois, which lies within the limits of Alabama, is taken there from Tennessee and from Illinois.

The grasses and the forage plants named by correspondents in the northern counties of the State are Bermuda, orchard, herd, timothy, false Guinea or Johnson, wild rye, rush grass, sedge, broom sedge, pea-vine, redtop, and red clover. Other varieties may be included in the general term "native grasses," used by many correspondents.

In the eastern part of Alabama, crab and Bermuda grass, Japan and Spanish clover are mentioned as furnishing a succulent, but rather coarse forage on uncultivated lands. Hay is reported as being salable at $12 to $15 per ton. In the southern portion of the State little or no hay is made. In that region the plants reported as furnishing the greater part of the sustenance of the stock are described as being wire grass and piney woods grass.

Cornstalks, which in the Northern States form so important a part of the supply of food for cattle in winter, have no quotable value in Alabama. They appear to be looked upon as worthless; there is, therefore, little or no sale for them. In some parts, at least, of the State they are never saved. Straw is sold only to a limited extent, and fed but little. Prices quoted range from $5 to $15 per ton, the last-named figure being given for cut straw in the extreme southeastern part of the State.

GRAIN AND OTHER FOODS.

Some corn-meal, grits made from corn, and chop are fed to cattle, as is unground maize also, but cotton-seed and cotton-seed meal appear to form the bulk of the fattening rations given to cattle in Alabama. Sorghum seed, peas, and wheat bran, with the addition of sweet potatoes, pumpkins, and turnips, complete the list of foods the cattle of this State receive.

Of the cereal production of the State the census of 1880 gave the following figures as representing the totals: Corn, 25,451,278 bushels; oats, 3,089,869 bushels; rye, 28,402 bushels; wheat, 1,529,657 bushels, and cow-peas, 414,434 bushels. Corn was quoted in the northern and western counties at 50 to 75 cents per bushel; in the southern half of the State as selling at 60 to 75 cents, with one report from Conecuh County giving the price there as 80 cents per bushel.

WATER SUPPLY.

All Alabama is most bounteously supplied with pure water. In the extreme northeastern corner of the State the Tennessee River crosses the State boundary, and thence flows southwest about 50 miles. There it turns toward the west, leaving the State again at its northwestern corner, after having given to Alabama 225 miles of navigable water. The watershed south of the Tennessee is narrow, but its tributaries are many. The large rivers of the State are the Tombigbee, the Alabama and the Coosa. The latter crosses the eastern border of the State about 60 miles from its northern end, and becomes merged in the Alabama. The latter has some 420 miles of navigable water, and the Coosa has

150 miles. The general course of the two rivers is south-southwest to the Mobile Bay. The Tombigbee enters the State from the west, and keeps a south-southeast course for about 55 miles in a direct line. It there joins the Warrior, which comes down from the northeast. The two then flow on together, as the main Tombigbee, due south to meet the Alabama, 50 miles above the Mobile Bay.

For fully 180 miles above the southern boundary of the State the Chattahoochee forms the eastern limit of Alabama. Together these rivers give an aggregate of some 1,600 miles of navigable waterways. They have tributaries almost innumerable, furnishing in every part of the State an unfailing and ample supply of pure water. For live stock this water supply is practically without limit in quantity, and in quality it is unsurpassed.

Having a large area admirably adapted to the production of generous crops of grass and other forage; with a climate so mild as to make feeding almost entirely unnecessary even during the most wintry times seen in the State, when reasonably good pasturage is furnished; with a water supply vastly better than can be found in all the country between the Missouri River and the Rocky Mountains; and with convenient railroad and water transportation to great markets not far distant, there seems to be no good reason for supposing that beef growing and dairying cannot be easily placed among the most profitable and important of all the industries of Alabama.

DISTRIBUTION OF CATTLE.

In 1880 Alabama had 271,443 milch cows, 75,534 working oxen, and 404,213 other cattle, no account being made of animals owned by persons not cultivating farms, whether in cities or villages, or not. In the year 1884 the State contained 279,668 milch cows, an increase of 8,225, or 3.03 per cent., and 480,100 working oxen and other cattle, or only 352 more than were shown by the census of 1880. In the year of 1870 the number of working oxen in the State was 59,176; the statistics of 1880 exhibited an increase of 16,358, or 28 per cent. in this class of stock, whereas the returns for the whole United States showed a decrease of 325,430, or 24.7 per cent. in the total number of working cattle during the same decade.

The distribution of cattle and the relation thereof to the area of the several geographical divisions of Alabama in the year 1880 were as given in the subjoined table. It is not likely that material changes have occurred since those statistics were gathered:

Districts.	Working oxen.	Milch cows.	Other cattle.	Total cattle.	Total acreage.	Cattle per 100 acres.
Northwestern	5,358	21,193	27,088	55,639	1,731,885	3.09
Northern	8,488	37,739	49,595	95,822	2,567,266	3.73
Northeastern	6,106	21,829	31,880	59,815	1,452,578	4.12
Eastern	6,023	20,949	28,590	55,562	1,574,831	3.53
Middle	9,569	35,432	51,422	96,423	2,455,914	3.60
Western	5,775	27,560	36,919	70,254	2,024,678	3.47
Southwestern	8,281	27,593	48,904	84,778	1,494,994	5.67
Southern	14,304	44,759	69,982	129,045	2,826,523	4.57
Southeastern	11,680	34,389	59,833	105,852	2,726,665	3.88
Total	75,534	271,443	404,213	751,190	18,855,334	3.99
United States	993,841	12,443,120	22,488,550	39,675,573	1,900,809,000	2.08

NOTE.—In the total for the United States as given above, 3,750,022 is added as the estimated number of cattle on the open ranges of the West at the time the statistics for the census of 1880 were collected. In the total acreage of the United States is included that of inland waters, but Alaska is not included.

The growth of the cattle interests of Alabama between 1850 and 1860, the shrinkage during the decade ending in 1870, and its very marked growth between 1870 and 1880, is shown below:

Classes.	1850 (population 771,623).	Per M.	1860 (population 964,201).	Per M.	1870 (population 996,992).	Per M.	1880 (population 1,262,505).	Per M.
	Number.		Number.		Number.		Number.	
Milch cows....	227,791	295.2	230,537	239.1	170,640	171.1	271,443	215.0
Working oxen.	66,961	86.7	88,316	91.5	59,176	59.3	75,534	59.8
Other cattle....	433,263	561.5	454,543	471.4	257,347	258.1	404,213	320.2
Total.....	728,015	943.4	773,396	802.0	487,163	488.5	751,190	595.0

It will be noted that the greatest number of cattle per hundred acres reported in any one district were in the southwestern corner of the State. There the average supply was 5.67 cattle per hundred acres of land. The three counties showing the greatest average were, respectively, Washington, having 13.32, Mobile County, with 9.0, and Baldwin, with 8.41 cattle per hundred acres. Those three counties have access by short and easy routes to Mobile, which, by offering a ready market for cattle products, stimulated the milk, butter, and beef interests.

CHARACTERISTICS OF CATTLE SUPPLY.

In response to the query, "What are the chief characteristics of the cattle most commonly found in your vicinity?" correspondents, almost without exception, described the general supply as being composed of "natives," common stock, or "scrubs." These are very hardy and healthy, comparatively mild and gentle in temper, and thrive fairly with reasonable care under the favorable conditions of climate, food, and water supply to which they are subjected. The cows yield but a small quantity of milk, but raise their calves well. The cattle are generally small, weighing alive from 300 to 900 pounds each in the southern and eastern counties, from 300 to 700 pounds in the western, and from 300 to 1,200 in the northern districts. The heaviest weights reported were in the county of Cullman, Mr. H. McDermid giving the range of weights attained as 800 to 1,200 pounds. In this county are some pure shorthorns. The long-since established German colony of Cullman, in the central part of Cullman County, may possibly have exerted some influence over the breeding and the care of cattle in that region.

IMPROVEMENT OF CATTLE.

The question "What established races of purely bred cattle are kept?" elicited the information that Jerseys have been introduced into many counties of Alabama. They appear in reports from every quarter of that State. Apparently most of them were imported within the last five or six years. Holstein-Friesians have been taken in to a limited extent, and Shorthorns form a large percentage of the improved cattle of the State. Devons seem to have been somewhat generally imported, possibly because of their superiority as yoke cattle, of which Alabama makes use to a great and increasing extent.

Writing from Randolph County, but intending his remarks to apply

to all that part of Alabama lying below the thirty-fourth degree of latitude, Mr. E. S. Perryman says:

> Without much care imported stock do well here, and cross splendidly upon the natives. The latter grow to a good size, are thrifty and vigorous, and winter well. Our favorable climate and good pasturage during nine months of the year offer great inducements to stockmen.

Some counties, as De Kalb and Cullman, report that 25 per cent. of their cattle not purely bred have one-half or more of their blood from purely bred animals. A few counties report that their stock has no improved blood, while in yet others from 1 to 20 per cent. of the cattle are grades.

In a statement published in 1884 by the United States Department of Agriculture, statistics were presented showing what per cent. of the cattle in all the States and Territories were "high grade," that is, had from purely-bred animals at least one-half of their blood. This statement, the result of a systematic canvass, places Alabama thirtie in the list of forty-seven States and Territories, in point of number of grade cattle in the State, as but 60,781 or 8 per cent. of her entire supply has any share of pure blood. As regards the percentage of improved cattle, Alabama ranked with Mississippi and the Indian Territory, each showing 8 per cent. They outranked Arizona, Louisiana, and New Mexico in this particular point. In view of the fact that the work of breeding a better class of stock began so recently in this State, and that splenic or acclimating fever kills a considerable number of the cattle taken from colder regions to Alabama, thus largely increasing the cost of improvement, the progress made appears by no means discreditable. In the success which has been obtained, small as it may seem to those unacquainted with the full facts, there is a promise of a most profitable future, the more especially since it is believed that very young calves taken to the region where splenic fever has its constant home, escape the attacks of that malady. This disorder is probably that which is alluded to as murrain, red-water, acclimation fever, Texas fever, and Spanish fever, by correspondents in different parts of the State.

Another and possibly more potent cause which has retarded the development of the cattle interest of the State may perhaps be found in the fact that the cultivation of cotton has absorbed to a very considerable extent the energies of the people. This was perhaps but natural, since no crop grown on a corresponding scale is more uniform in yield and in selling value. He who has a crop of cotton for sale can convert it into cash at will, as readily as the farmer everywhere can turn his cattle into money.

DAIRY PRODUCTS.

With few exceptions reports from all parts of Alabama state in effect that but little dairying is done in the State, except as carried on in the farm homes. Cows are kept "for family use," the surplus butter being sent to market from time to time when convenient, as is the custom in other parts of the country where creameries and cheese factories have not been established. There can be no doubt, however, that the State presents many conditions favorable to successful dairying, as is shown by facts mentioned elsewhere in this report. Even now, when comparatively little effort is made to develop the naturally great resources of Alabama in this direction, the output of milk, butter, and cheese is enough to suggest that a little energy exerted in that direction would place the State in a very creditable position in this respect among other

members of the Union. The subjoined table shows the quantity of butter, of cheese, and of milk, in pounds, produced on and sold from farms in Alabama, as shown by the census reports of the United States for the several years mentioned. In the table the number of pounds of each article sold, per capita of population, is shown in the column marked "population," as the quantity sold per head of cows is also shown in the column under the heading "cow." It should be borne in mind that the milk reported went into direct consumption, instead of going to cheese or to butter factories, to again appear in the table as butter or as cheese. The totals, therefore, represent the number of pounds actually produced and sold from farms within the State. The output of butter in 1879 was the same, per capita of population, as it was in 1860, while the quantity sold per cow was 3.35 pounds more in 1880 than it was in 1860. This represents a total of 1,969,240 pounds, worth not far from $40,000. The gain in sales over those shown by the census of 1870 was yet greater, amounting to an average of 10.7 pounds per cow, or 4,783,966 pounds, an increase of 148 per cent. in the total quantity sold, and of 57 per cent. in the quantity sold per cow. If the rate of increase can be kept up during the current decade the sales of butter at the time of taking the next census should amount to 19,834,350 pounds, and to 46.6 pounds per cow. To those who are acquainted with the rapid progress making, in some localities of the State, in the improvement of cattle, and with the natural advantages favoring stock keeping in Alabama, the rate of gain suggested seems to be quite possible, and perhaps even probable. The butter sold from farms in the whole United States, as reported by the census of 1880, averaged 64.8 pounds per cow, and 16.1 pounds per capita of population.

Dairy products of Alabama.

Classes.	1880.			1870.			1860.			1850.		
	Pounds.	Population.	Per cow.	Pounds.	Population.	Per cow.	Pounds.	Population.	Per cow.	Pounds.	Population.	Per cow.
Butter	7,997,719	6.3	29.5	3,213,753	3.20	18.8	6,028,478	6.30	26.15	4,008,811	5.19	17.60
Cheese	14,091	0.1	0.1	2,732	0.01	0.1	15,923	0.02	0.07	31,412	0.14	0.13
Milk	2,306,213	1.8	8.5	902,666	0.90	5.3	.....	.....	.....	.....	.....	.....
Total	10,318,023	8.2	38.1	4,119,151	4.11	24.2	6,044,401	6.32	26.22	4,040,223	5.23	17.73

BEEF PRODUCTION.

Of the entire supply of cattle in Alabama 480,000 are yoke oxen and other cattle, and 279,668 are milch cows; yet these are so distributed among the 135,684 farms in the State, that most correspondents agree in asserting that the production of beef is not carried on there as a business. The average number of milk cows per farm was, in 1884, only 2.06, and of oxen and other cattle 3.55 per farm. Cattle are usually kept for the varied uses of the farm, for working in field and forest, to furnish milk for local consumption, and to make butter. After serving these purposes until old age or other cause gives reason for their slaughter, they are allowed to fatten on grass and are then sold for beef. A few steers are kept for the sole purpose of making beef.

Some cattle are imported, usually from Georgia, for grazing. Cullman County, in the central northern part of Alabama, annually imports

from 3,000 to 4,000 cattle from Blount, Morgan, and other adjoining counties. De Kalb, Jackson and Marshal Counties, in the northeastern corner, receive some stock from Georgia, but obtain the major part of the supply wanted from counties within the State. Some of the central eastern counties do the same. Several of the western counties report that no cattle are imported for grazing.

In all Alabama systematic feeding for making beef is apparently not practiced, although it is asserted that grazing and fattening there are profitable operations. On this subject Mr. D. I. Durham, of Jackson County, writes:

> The cattle business is a good one, either when buying young cattle and keeping them two or three years, or when purchasing grown steers and feeding them for the March and April markets.

The stock usually bought for grazing are quite generally small, common native, or "scrub" heifers and steers, ranging in age from one to four years.

Very few calves are slaughtered for use as veal. It is likely that none are so killed except in the immediate vicinity of cities and towns, although Cullman County in Northern, and Choctaw in Southwestern Alabama, report that 10 per cent. of the calves are there slaughtered for veal. Correspondents in several counties quote veal calves as selling at a range of from $2.50 each in Madison to $10 in Randolph County. The average price for the whole State would not be far, probably, from $6 each.

In the northern part of the State, particularly, but in some counties in other districts also, cattle for fattening are bought in autumn and sent to market one or two years later. Two-year-olds are preferred, but those of any age from one to ten years are taken. In most districts stock is sent to market when matured. That is usually in autumn when the animals are "grass fat." If not sold then they must be kept through the winter. As few, if any, are fully fed, the flesh put on in summer is lost before spring, and the pasturage the summer following is required to restore the lost condition.

The course followed by most owners of store stock seems to be that described by Mr. Prude, of Pickens County, as follows:

> Stock cattle are generally fed only enough to keep them alive through the winter. When spring arrives they are turned out into the woods and "old fields," where the range is not sufficient to fatten them. They are then improved generally enough to make a poor quality of beef. * * * I will state that few cattle are raised in this county, and none directly for market. Sometimes a small surplus accumulates, and these are sold off in summer and fall. Generally they are shipped to New Orleans and sold as grazers.

From 60 to 100 per cent. of the cattle sent to market from the several districts of Alabama go in the partly matured condition called "grass fat." As a rule they are marketed at no earlier age than were those of ten or fifteen years ago; but Conecuh and Escambia correspondents say that from those counties beeves are marketed some two years earlier than were those of the last decade. A gentleman writing from De Kalb County puts the difference at from one to two years. The ages of the beeves range from four to eight years. The older ones are oxen and cows which, having passed the period of their usefulness under the yoke or as milk-givers, were sent to the butcher to render the last service of which they were capable. It is probably yoke oxen that reach the weight of 1,500 pounds mentioned as the higher limit of weights attained by beeves. The lower range of weights of living beeves in Alabama is not far from 500 pounds.

MARKETS.

In the South there are no great central markets, such as in the North are ready to absorb all the live stock the country can send to them. A large share of the cattle Alabama has to spare, from year to year, is used for local consumption in the towns and cities of the State. The rest are scattered among the large towns of neighboring States. A few are sent as far as Cincinnati, whence they may find their way to the pastures of Ohio, Virginia or Pennsylvania, or to the stalls of the cities of the North Atlantic seaboard. From the northern part of the State some cattle go to Memphis, over the East Tennessee, Virginia and Georgia Railroad. Others are sent over that road to points in Georgia.

Alabama is divided into two parts, not far from equal in area, by a railroad which stretches from Pensacola, near the Gulf of Mexico, northward to the southern boundary of Tennessee. Another railroad crosses the State, from West Point on the Chattahoochee to the western line, passing through Montgomery, Selma, and other towns of importance on the way, and dividing the State into a northern and a southern part about equal in size. The Alabama and Georgia Southern Railroad follows the summit of the watershed between the Coosa and the Warrior Rivers from the extreme northeastern corner of the State to Sumter County in the west. Atlanta, Boone, Chattanooga, and Savannah receive some of the surplus stock, as do Charleston, S. C., and Pensacola, Fla. The latter place and Mobile are ports through which some of the stock may find its way to Cuba and to New Orleans. From the last-named market some of these cattle at least, if not many, are sent to graze on the plains of the West.

The shipment of young cattle from the Southern States lying east of the Mississippi is criticised severely by Southern writers. They argue that farmers in those States can very easily give to such animals all the food and attention required to make of them very fair beeves. It is urged that the farmers of that region owe it to themselves as a measure of ordinary sagacity to bring their stock quickly to maturity, and to then sell it to the consumer whenever it shall be possible to do so. In doing this they would be greatly favored by constantly existing natural conditions which, by a very moderate effort, may be so improved that the people of no other States in the Union would enjoy greater advantages in cattle-raising. Under such circumstances the cattle interest would soon become one of the easiest, surest, and most important sources of income in this State. But by selling their stock in its unmatured state the owners deprive themselves of the profits gained by the grazier, and of the double gain made by those who feed the products of their fields to stock on their own land, thus securing at home a market for their crops and fertilizing their land at the same time.

COST OF GRAZING.

By the census of 1880 the farms of Alabama comprised 18,855,334 acres, valued at $78,954,648, an average of $4.20 per acre. This included fences and buildings. The average value of the products of the farms was $3.02 per acre; this is 72 per cent. of the value of the land, and aggregated $56,872,994. It may be safely assumed that the average value of the uncultivated lands of those farms does not exceed $2.50 per acre, since "wild lands" are quoted as being worth from 50 cents in the counties bordering on the Gulf, to $2.50 in higher regions, where profitable cultivation is comparatively easy.

If it be assumed that each of the 404,218 cattle other than milch cows and working oxen in Alabama, requires for its sustenance the entire products of fifteen acres of the uncultivated lands of the farms in this State, there would still be left 6,416,450 acres for the support of 279,700 milch cows. Estimating the value of the fifteen acres at $2.50 each, and interest on that sum at 12 per cent. per annum, the cost of pasturing each steer will be $4.50 per year. If the interest be estimated at the legal rate of 8 per cent. the cost would be $3 per year. But the fact seems to be that those uncultivated lands are capable of supporting comfortably more than 1 bullock to each fifteen acres. It is, indeed, the opinion of those who have wide acquaintance with the capabilities of the lands of that State, that an average of 10 acres to each animal would furnish ample grazing. At that rate, with interest at 8 per cent., the cost of pasturing a steer would be only $2 per year, since nothing is paid for attendance on herds grazing at will or on farms. This is less than one-quarter the cost of the same item in Illinois, where the average value of the land was $31.88 in 1880.

But low as is the cost of grazing in Alabama, it is held that it may be reduced by converting the uncultivated lands into permanent pastures by introducing those grasses and forage plants which are so easily propagated there, and thrive so luxuriantly when once they have obtained a foothold in that warm and moist climate.

FATTENING BEEVES.

Of Indian corn Alabama, in 1879, produced 25,451,300 bushels on 2,055,930 acres of land. This average of 9.36 bushels per acre should not be accepted as indicating the capacity of the soil for the production of corn. This grain has never been considered as being of the first importance in Southern agriculture, and it may be safely said has not usually received the care necessary to the production of a heavy yield. If the average of 9.36 bushels indicated the maximum yield that can be obtained by the expenditure of as much labor as is given to the cultivation of the above cereals in the Northern and Western States, it might be assumed that the raising of corn for use in fattening cattle could scarcely be made profitable in Alabama. But it is claimed that the yield of corn may be greatly increased by the outlay of more skill and energy in its cultivation. In the autumn and early winter of 1884 corn was sold at 40 cents per bushel in some parts of the State. In February and March it was quoted as worth 60 to 75 cents per bushel.

So little has been done in fully fattening cattle in Alabama that no trustworthy data can be obtained showing what the average cost is in that State of fully maturing such stock. But with corn at 60 cents per bushel and rates of freight from Central Alabama to Cincinnati at $65 per car load, the business appears to be not altogether hopeless. It is estimated that 50 bushels of corn fed during the summer to a two-year-old steer upon a good pasturage would make him weigh some 1,200 pounds by the time the first frosts of autumn cut down the grass. At 60 cents per bushel the corn would be worth $30; pasturage for three summers is estimated at $9; interest for one year on the cost of the dam at $3, making a total of $42 per steer. If the animal can be sold when thus fully matured for 4 cents per pound on the farm, the farmer will receive a profit of $6 in addition to the advantage accruing from the fertilization of the land. Stock having a strain of the blood of any one of the established breeds of beef cattle would, beyond doubt, mature earlier, and attain a considerably greater weight upon a corre-

sponding outlay of food. Men can be hired to care for herds at wages ranging from $6 to $10 per month and maintenance.

Chief among the foods other than corn used for fattening cattle in Alabama is cotton-seed and cotton-seed meal. Of the fattening qualities of this food a high opinion is held by those who use it, but it is said that the fat produced by its use is not as firm and solid as is that made by feeding corn. No data definite enough to establish an accurate comparison between the practical results obtained by feeding cotton-seed with those of feeding Indian corn have been obtained.

As would be expected of a country where the climate is so very mild and even throughout the year, few cattle, except milch cows, are sheltered under roofs. Nor are even the milch cows generally provided with shelter. Cows drop their calves during the winter and never go under cover or receive any food other than that which they can pick up for themselves in the open fields and the woods, yet they have done well for themselves and their young.

DISEASES.

Several years ago, before the war, a disease described as black-tongue prevailed to a considerable extent in Alabama, but since that time only occasional cases have appeared. That was the only malady reported as having appeared in the form of an epizootic. Several correspondents mention "a murrain that kills an animal now and then," but even such cases are few. Whether or not this murrain is the splenic fever that is so often fatal to cattle introduced from more northern regions does not appear. One correspondent, Mr. Perryman, of Randolph County, says "that of cattle thus imported 75 per cent. will, with proper attention, escape or recover from the acclimating fever."

A few report cases of snake bite, but the exact nature of this ailment is not known. In many parts of the country *actinomycosis* is believed to be the result of the bites of venomous serpents, and is popularly called "snake bite." It is not impossible that this is true of Alabama. It is clear, however, that the cattle of Alabama are almost entirely exempt from everything of the nature of epizootics. The thought forces itself upon one who studies the peculiarities of the State that there appears no good reason why Alabama, being near the great consuming markets of the country, possessed of adequate facilities for transportation, blessed by a never ceasing and abundant flow of pure water, by ample shelter and almost perfect immunity from injurious storms, with cattle free from epizootics, is not in position to compete successfully in beef production with the most favored sections of the land, not excepting the great ranges of the West.

GEORGIA.

In respect to the number and value of her live stock Georgia holds no unimportant place among the States and Territories of the Union. In number of oxen for the yoke she is fifth; in that of milch cows she is eleventh, and in that of her other cattle she ranks twelfth in the list. In the quantity of milk sold from farms she outranks fourteen States and Territories, but exceeds only three in the average quantity thus sold per cow. In the total amount of butter sold from farms, Georgia falls behind twenty-seven other States and Territories, and outranks

six in the average quantity thus sold per cow. In the total weight of cheese made on farms within the State, Georgia is fortieth on the roll, and in the number of pounds made per 100 cows exceeds only five of the States and Territories. For the improvement of her cattle comparatively little has been done, but during the last ten years an interest has been created in that work, and improvement is now going on at an encouraging and an accelerating rate. At present Georgia is in advance of only six States and Territories in the percentage of cattle having a strain of the blood of established breeds; but as there is ample evidence showing that in natural conditions favorable to stock growing, to the production of beef, milk, butter, or cheese, of pork, mutton, or of wool, of horses or of mules for draft, few if any States on the continent surpass Georgia, there is reason for expecting that she will, at no very distant day, be among the foremost in cattle raising, in dairying, if not in all other departments of the live-stock business.

Georgia extends from latitude 30° 30′ to 35° north, and from longitude 4° to 8° 30′ west from Washington. It includes 26,043,283 acres of land, divided into 138,626 farms. Of cultivated land there were, in 1880, including fallow and grass in rotation, 7,690,292 acres; of permanent meadows, pastures, and fruit land there were 514,428 acres; of woodland and forest, 15,269,225 acres; and of other unimproved lands, including old fields not producing wood, 2,569,337 acres. These lands, and the fences and farm buildings thereon, were valued at $111,910,540, an average of $4.29 per acre.

The value of the live stock of Georgia was $25,930,352, or 22.3 per cent. of that of the lands, fences, and farm buildings in the State. In Illinois the value of the live stock at that time was 13.1 per cent. of that of the farms. Of the entire population of Georgia in 1880, fully 28 per cent., or 432,204, were engaged in agricultural pursuits. Of these, 145,062 were owners of the farms, 284,060 of the remaining 287,142 having been plantation laborers. No other Southern State shows a larger percentage of its population devoted to farming.

Agriculturally speaking, the State may be divided into three distinct districts. The Northern, or Upper Georgia, is a somewhat mountainous region, having fertile valleys, rich in succulent and nutritious grasses and forage plants, while the hills form good grazing grounds. This region is favored by a climate moderately cool in summer and mild in winter, even in the mountains; it is watered by springs, by clear and unfailing brooks, and is drained by rivers of considerable size. Grain, hay, and forage crops can be produced there abundantly, and of good quality. Of Indian corn there were harvested in 1879, 23,202,018 bushels on 2,538,733 acres of land; of oats, 5,548,743 bushels on 612,778 acres; and of rye, 101,716 bushels on 25,854 acres. The average yield of the several crops mentioned were, respectively, 9.17 bushels of corn, 9.5 bushels of oats, and 3.93 bushels of rye per acre.

Middle Georgia is a comparatively thickly settled country, lying between the high lands of Upper Georgia, and the low, flat region of Lower Georgia. In the favored middle region the planters are much given to the cultivation of short-staple cotton. There corn, oats, barley, wheat, and other grains thrive, and fruits in great variety grow there in profusion, and of exceedingly good quality.

Lower Georgia is the region of long-staple cotton, the cultivation of which absorbs most of the attention of the planters. Rice, sugar-cane, oats, peas, and fruits of many kinds, including even the orange and lemon, are grown. A considerable part of the country is covered by forests of the long-leaf pine, which there attains an excellence not sur-

passed in any other place. Live oak, cypress, and yellow pine also abound. In these forests the ground is carpeted by wire grass, which, burned off early in the spring, comes quickly up again and furnishes generous pasturage for stock.

The importance of developing the natural resources of a State so greatly favored was long ago appreciated, but it was not until the year 1874 that a State Department of Agriculture was created. The first commissioner appointed over that department was Dr. Thomas P. Janes, who resigned in 1879. The Hon. John T. Henderson was then appointed to the office, which he still holds. The department earns each year about $75,000, and its expenses are about $10,000, leaving a surplus of $65,000 to go into the treasury of the State. The department has published a number of useful works relating to the agriculture of the State, among others a "Manual on Cattle," another on swine, and a third relating to poultry.

STOCK RAISING.

In Georgia, two systems of stock raising are followed. In one stock are confined in inclosures and receive from their owners care, food, and some shelter. This method is more generally adopted in the farming districts of Upper and Middle Georgia than in the Southern part of the State. In the mountains, stock range at will over the hills and in uncultivated valleys, as they do in the vast pine forests of Lower Georgia. They find in wire or in Bermuda grass the greater part of their sustenance. The cost of keeping cattle in this manner is merely nominal, since owners of herds need buy little if any more land than will serve for a homestead on which to establish headquarters. Their stock roam at will over lands owned by non-residents, and their pasturage costs their owners almost absolutely nothing. Under conditions so favorable the profits of cattle raising would be considerable, even though the animals sold at low figures. It will be seen that there is a resemblance between cattle growing in Georgia and the same business on the plains of the West. Cows are seldom if ever milked; their calves are permitted to run with their dams until the latter wean one crop that another may take its place at the udder.

In Georgia, however, the stockman has an advantage in the fact that his cattle have ever at hand an abundant supply of water and are never exposed to severe storms. No norther can harm flock or herd in the forests, nor among the sheltered valleys and timbered hills of this State. The forage of the open plains may be of better quality than are the coarse native grasses of the southeast, but it is usually found that the stock of Georgia are generally in as good condition as are those of the open plains when grass appears in early spring. In the southeast, cattle do not drift far from their native pastures, but remain content and undisturbed on the grounds to which they are accustomed. This saves their owners from losses of a kind which sometimes are heavy on the unfenced western ranges.

Writing in answer to questions bearing on this subject, Mr. F. D. Wimberly, of Twiggs County, in Middle Georgia, says:

> You see that I make no formal replies for this report, for I cannot, as no regular attention is paid to cattle here; but there is no part of our great country that is so adapted to cattle, with profits of which the West never dreamed. There are vast creek swamps filled with the best winter grazing of cane and grass. We have no snow and seldom ice. Oats, wheat and rye sown in September and October give unlimited grazing until February. Cattle require little or no shelter. Farm hands

employed by the year will cheerfully do any work required, as watering and feeding, as part of their duties.

I state these things, not as fancy possibilities, but as assured facts. There is not a business yielding a more certain profit than results from cattle raising in Middle and Southern Georgia. Cattle require simply to be penned at night, seldom if ever require shelter, remaining in fine condition on what they "pick up" in pine woods and fields during the whole year, except from January to March, when a little extra feed will keep them in prime condition. We can exchange two tons of cotton-seed at the mills for one ton of cotton-seed cake, which is useful in fattening cattle.

Our people here are not out of the old ruts, but if any enterprising capitalists would enter the cattle business here their remuneration would be great. I have no land nor cattle to sell, so you can see that my remarks are disinterested. I have always kept an excellent breed of cattle for my own plantations, as my grandfather, Rev. Henry Bunn, imported some Devons thirty years ago, and I have had Alderney and Jersey strains introduced from time to time, so that my own cattle are not merely scrubs. The main body of the people here are totally indifferent to the advantages of stock-raising.

I mentioned oats, rye and wheat to show what could be done in fattening cattle; but I repeat that cane for winter grazing is abundant, contiguous to running streams, with which our section abounds. Bermuda grass can scarcely be destroyed, and yields when undisturbed—not even cultivated—two tons of hay per acre. Crab grass, crow-foot, and Johnson grass flourish. Upon them the Georgia farmer makes unending war in behalf of "King Cotton."

I have felt moved to write at length because I appreciate the great opportunities that are awaiting development in Georgia.

On the subject of cattle-raising in Georgia, Hon. William A. Harris, secretary of the Senate of Georgia, writes as follows from Worth County:

This county is 40 miles square, covered with a fine pasture grass in summer, called wire grass; a great deal of cane on flats and creeks, and a profusion of wild oats. We have no stock except scrub cattle, save a few milch cows in families. The owners, as a rule, want no milk and butter. They go in for the calves.

The cattle are taken up from the woods in April, penned, and kept until July 1; then the calves are marked and branded, and the whole turned out to make their living until the next April. The steers at three and four years old weigh 400 pounds, but it is the sweetest beef in the world. That is the cost of raising cattle here.

You may see a man here who marks from 800 to 1,000 calves each year, dropped that spring, but who never sees milk or butter on his table; none after the 1st of July. These steers find ready sale at fine prices in Savannah and other cities. A great many go to Havana. Shipments to the North we know nothing of. Freight charges cannot be so very high, or these men engaged in buying and shipping would not get rich as they do. By November 1 there will not be a dozen steers left in this county.

The grazing is free to every one here, and your mark and brand is respected by one and all. There is no attending of stock, and no rent is paid for grazing. This is a stock county, and all made here is on cattle, hogs and sheep. This county, with Irwin and Colquitt, forms the best stock region I ever knew in this State or elsewhere. A man with 100 cattle or a flock of sheep of good breed, located here, is rich. He should buy 490 acres of land for $500 per lot, put up some nice log cabins, and tread his land with his stock; make all he wants of rice, corn, tobacco, cotton, sugar-cane, potatoes, and that in the finest fruit country in the world. What more can he want?

THE CATTLE SUPPLY.

In 1870 Georgia had 54,332 working oxen. In 1880 the number had shrunk to 50,026, a decrease of 4,306. Of milch cows there were 231,310 in 1870, and 315,073 in 1880, an increase of 83,736, or 3.57 per cent. per year during the decade. By 1884 that number had grown to 341,048, a gain of 25,975 in the four years. This shows an average yearly increase of 6,494 head. Of other cattle there were in 1870 reported 412,261. In 1880 the census showed an increase of 132,551. In 1884 the number of working oxen and cattle other than milch cows had become 610,811, valued at $7,177,030. At the same time the milch cows in the State were valued at a total of $6,493,545, an average of $19.04 per head, the average value of the other cattle having been $11.75.

Of the entire supply of cattle in Georgia, 85,670 had the benefit of an infusion of the blood of purely-bred animals. The other 91 per cent. are mainly what are popularly known as scrubs. The latter are described as having some of the peculiarities commonly found in the cattle of Texas, of Spain, and perhaps of other warm countries where little or no attention has been given to the selection of breeding animals for the purpose of raising the quality of the stock. These native cattle are capable of enduring much neglect, and manage to exist through the seasons of partial starvation, usually with no worse result than the loss of much of the flesh gained by a season of good grazing. In summer they subsist, in Upper Georgia, upon grass alone, and during the short winter upon such forage as they can find in the woods, supplemented by rations of "shucks," hay, straw, and other fodder.

Some of these native cattle are polled, while others have long and slender horns. Whether or not the polled animals are descended from any established polled breed cannot be determined with certainty. A few polled cattle have been taken to Georgia from time to time, and a few Galloways are mentioned as being kept in the northwestern part of the State. The native stock thrive well whenever supplied by nature or by man's care with sufficient food, and fatten readily, as the Texas cattle do, when given a fair ration of grain. In temper the cattle are usually gentle and quiet. They are prolific and notably hardy. In February last Mr. W. A. Harris, of Worth County, wrote of this race of stock:

> They are never fed, are valued at $5 per head, and are so poor now you can span one. A four-year-old steer weighs 400 pounds.

About the same time Mr. O. J. Nailon, of Whitfield County, wrote describing the hardiness of the native cattle, as shown in their ability to withstand cold and exposure, with poor feed and little care and shelter.

There seems to be ample evidence showing that these cattle, little valued as they are and have been by their owners generally, possess some qualities desirable as a foundation upon which to build a serviceable race of dairy and of beef cattle. Hardy, of rugged health, capable of finding for themselves food and shelter, long lived, fairly prolific, free as yet from epizootics, fattening quickly upon a generous diet, yielding in some cases a fair quantity of milk, there seems to be no reason for doubting that a single cross of the blood of a pure breed of pronounced and fixed milk, butter, or beef producing character would make a very valuable stock, that would add largely to the wealth of the State by ending the necessity now existing for sending to other States for butter, cheese, and beef to supply the demand for local consumption.

IMPROVEMENT OF CATTLE.

Early in the present century the improvement of the cattle of Georgia by the importation of animals of merit was undertaken. In the year 1820 Thomas Miller took to that State a cream-colored bull, the breeding of which is not now known, from England. Durhams were imported in 1836 by Thomas B. King, and about 1844 by William Gibbons, of Chatham County. Between 1855 and 1865 shorthorns, Ayrshires, and Jerseys were taken to Upper Georgia, Richard Peters, of Atlanta, having been active in the work of introducing Jerseys. The Rev. Henry Bunn took some Devons to Twiggs County thirty years ago. Mr. R. Tappan, of White Plains, is credited with having imported Devons about twenty years since, and Mr. L. Hazelhurst took cattle of that race

to Camden County about the same time. In 1870 Mr. J. R. Wilder, of Savannah, introduced Jerseys into Cobb County, and between 1872 and 1874 Messrs. A. R. Jones, E. D. Hightower, and J. Phillips took Jerseys into Polk County, in Northwestern Georgia. Animals of that race were also taken to Lee County, in Southwestern Georgia, by Col. Lee Jordan and others, ten or twelve years ago, and to central Georgia in 1875 by J. C. Hart, of Union Point. The next following year Messrs. B. W. Hunt and S. W. Reid added Jerseys to their stock in Putnam County in the same district. Mr. Butler Woodard imported Jerseys to Whitfield County, in Northwestern Georgia, in 1878, and some were taken to Washington County in the same year by M. H. Boyer. Carroll County, in the central western part of the State, received Jerseys in 1879, and in 1880 J. C. Johnson, of De Kalb, C. S. Conder and F. Stead, of Campbell County of the same part of the State; Col. Thomas Matthew, of Central Georgia, B. S. Walker, of Walton County, in Northern Georgia, and several others in different parts of the State, invested in animals of that breed, which is evidently more popular there than is any one other race.

In 1882 Messrs. J. M. Lee, of Walker County, C. Grey, Catoosa County, B. Woodard, of Whitfield County, in Northwestern Georgia; Judge John Palmer, of central northern part of the State; and in 1882 and 1883 Capt. Robert E. Park, Robert A. Nisbet, R. H. Plant, S. T. Coleman, Robert Coleman, W. H. Virgin, and W. H. Mansfield, of Bibb County, in the central part of the State, and J. H. M. Clinch, of Camden County, in the southeast, all imported Jerseys. In 1883 S. J. Brown, of Villa Rica, took some Holsteins into northwestern Georgia, and this year Dr. Hoolfield has taken some of that breed to Washington County. So have Messrs. R. A. Nisbet and R. H. Plant, of Bibb County. These are by no means all who have joined in the work of improvement, but they may be considered as among the best known leaders in the movement. Others who appreciated the advantages offered by the conditions surrounding farmers of that State, and realize the number and extent of the benefits which may be secured by raising more and better cattle, are laboring to extend a knowledge of those benefits, and to induce the people generally to make use of the opportunities by which they are surrounded. For a time the results seemed to be unimportant. The charm of cotton culture with its prompt returns in cash for the labor involved, the long fixed habits of the people, and the character of the labor system retarded progress; but persistent effort has made a strong impression, and there seems now to be good reason for the hope expressed that the next decade will see a large percentage of the live stock of Georgia improved in character and that State exporting dairy products.

Correspondents residing in Northwestern Georgia estimate that the cattle of that district which have a strain of blood from purely-bred stock form from 2 to 20 per cent. of the entire supply of the several counties for which they report. Jerseys and the Holstein-Friesians are the dairy breeds introduced into that region, while Devons, Galloways, and short-horns represent the yoke and the beef breeds.

Replies from Central Northern Georgia place the percentage of grade cattle in the different counties respectively at from 5 to 30 per cent. of the total supply. A few shorthorns and Devons are mentioned, as are also Guernseys, Ayrshires, and Holstein-Friesians, but Jerseys seem to outnumber others of pure breeding.

In the northeastern part of the State less appears to have been done to raise the value of the cattle. Most replies from that section place

the percentage of cattle improved by good blood at a very low figure. None claim that more that 10 per cent. are grades, while more correspondents place their estimated improvement at 1 per cent.

Western Georgia estimates put the percentage of cattle, not purely bred, that have one-half or more of their blood from purely-bred animals, at from 1 to 15 per cent. In that large district Alderneys are mentioned by one correspondent in Coweta County, who says they were taken there by Dr. C. Redwin. "Argyle" cattle are mentioned as being in Pike County, and Guinea cattle in Macon County.

"Grade" cattle form but a small percentage, apparently, of the stock of Central Georgia. A few write of Devons, Holsteins, and Jerseys, but put the entire number of animals having some of the blood of pure races at from 1 to 25 per cent. of the entire supply of cattle in the counties covered by the several reports. In the southern and the southeastern parts of the State the percentage of improved blood is much below those figures, and in Eastern Georgia it seems to be no greater.

DAIRYING.

In 1884 the number of milch cows in Georgia was 301,408, showing an increase of 25,975 animals, or 8.2 per cent. over the supply reported by the census of 1880. Assuming that there was a corresponding increase in the output of dairy products in the same period, as it is more than probable there was, there were sent from farms in Georgia in 1884 some 405,366 gallons of milk, and made on the farms 8,033,293 pounds of butter and 20,720 pounds of cheese. This would give the average production of butter per cow as 23.8 pounds; and the average production of cheese as 6.6 pounds per 100 cows. In this, as in most Southern States, cows are, as a very general rule, kept for the use of the families of their owners. Dairying as an important source of income is in an undeveloped state; but attention has been of late years turned to this, as to other branches of the live-stock industry, and considerable has been done to arouse general interest in the subject of improving the milk-giving and butter-making qualities of the common stock.

To accomplish the needed improvement in the qualities of the cattle a goodly number of purely bred animals of dairy breeds have been introduced. Every division of the State, except perhaps the southern central, has several Jerseys, or at least, high grade Jerseys. Alderneys are mentioned, but it is possible that these are really Jerseys, since the latter are by many people called Alderneys. Ayrshires are spoken of often as being among the stock of the State, and it may be that the stock called Argyle cattle are Ayrshires.

The native Guinea cow is highly prized by those who know her, as being a good milker, very docile, hardy to the last degree under the rather negligent treatment accorded to her at times; and as living comfortably upon a supply of food much inferior in quality and smaller in quantity than would be needed by cows of a larger form, and yielding no more milk. Of this comparatively little-known breed, which is of American origin, Mr. W. H. Reese, of Marshallville, Ga., writes:

> They are exceedingly valuable, are very docile, and evince a good deal of fondness for their owner. The Rev. James M. Austin, pastor of the Methodist Episcopal Church at this place, informs me that he has owned them. He states to me that one of the cows he kept in his yard, and his little daughter, would frequently seat herself between the cow's horns and ride over the yard, the cow never doing the child any harm.
>
> The stock are quite low, the legs very short, with long, stout body. The one to which Mr. Austin refers could not have been more than 3½ feet high. She gave from

2½ to 4 gallons of milk per day, in two milkings. They eat much less than ordinary cows, and take longer to eat it. The stock seems to be the product of careful breeding by Col. John Stofler, of Thomas County, Georgia, near the Florida line. They seem to be well adapted to this climate. They readily bring from $40 to $150 each, according to purity of blood and breed. They are valuable for this climate, as they fatten kindly and eat less than ordinary cattle.

The confident hope is held by gentlemen interested in the welfare of Georgia dairying and agriculture generally that the work of improving the cattle of the State will have effected so great a change, within the next decade, that Georgia will be before the end of that period sending a good quality and quantity of butter and of beef to northern markets, instead of sending money to the North to pay for these foods to supply her own tables. This change will probably be hastened by the favorable conditions surrounding dairying and beef raising in that State.

BEEF PRODUCTION.

For store stock to be fattened for beef Georgia depends almost entirely upon her own herds, but receives a few cattle from Alabama. Those thus brought in are, as a rule, "scrubs," or unimproved native cattle. No very young stock is taken to Georgia from other States to be grazed and fattened for beef. Representatives of all the leading beef breeds are found in the State, including Herefords taken to Clinch County by Dr. L. C. Mattox, and Galloways in Whitfield County. Georgia imports few if any calves, and but a very limited number of store cattle of any age; but calves dropped in that State are almost universally saved to grow to mature age. Even in the vicinity of the larger towns there seems to be no such wholesale slaughtering of calves for veal as is seen in many parts of the Northern States. The greatest slaughter of calves occurs in the immediate vicinity of Atlanta, particularly in De Kalb County, where 50 per cent., and in Fulton County where 30 per cent. are thus used, and in Chatham County in Southeastern Georgia, where 50 per cent. are thus killed to supply Savannah. In many districts none are used for veal, and in no counties other than those named are more than 20 per cent. thus used.

The average cash value of calves slaughtered for veal ranges from $2 to $10 in the different parts of the State. Near Atlanta they are worth, in early spring, from $3 to $5 each, and near Savannah about $6 per head.

For making beef, stock of all ages are used indiscriminately. For grazing, of course young animals are preferred, but cattle of three, four, or more years are accepted. Most beeves are marketed when "grass fat," whatever their age may be at the time. There seems to have been little or no effort to put stock generally on the market at an earlier age than that at which cattle were sold ten or fifteen years ago. This may be, in part if not wholly, caused by the fact that the income from cattle is almost all profit, in the beef grazing portions of the State particularly. It is well known that where little cost attends the production of domestic animals of any kind and the profits are large, their improvement advances slowly. Competition is a strong factor in progress in this as in all other branches of human industry, and there is practically scarcely any competition in beef growing in Georgia.

When in marketable condition the beeves of this State weigh alive from 800 to 1,500 pounds. It may be that the greater weights mentioned are attained by working cattle that have been fattened, although there is little doubt that many of the animals of that weight are steers produced by using purely-bred bulls of a beef breed. Replying to the

question, "What are the usual average weights of the beeves, alive, when marketed?" a number of correspondents write that the net weight averages about 300 pounds. This indicates a weight of about 600 pounds on foot. Other correspondents give the weight as being from 40 to 80 pounds per quarter, or from 160 to 320 per carcass, dressed, and explain that cattle are never weighed alive in the districts reported.

FORAGE.

Of grasses and other forage Georgia has an abundant natural supply, and her soil and climate have been found favorable to a luxuriant growth of valuable imported plants. Of all the grasses grown in the State none appear to be more generally prized by the stock-owners than is the Bermuda grass (*Cynodon dactylon*), the "Daub" or sacred grass of India. Of this the Hon. W. J. Northen, of Atlanta, in answer to questions relating to the cost of raising cattle in Georgia, says:

> Our State is admirably adapted to the growth of valuable grasses. I have found no grass, alone, superior to Bermuda. I can scarcely express to you my appreciation of a well set Bermuda pasture. The perfection of grazing, however, is furnished in red and white clover sown with the Bermuda. This I have tried for three years, and I cannot hope to find anything better. If we can find a grass to furnish pasture a few months in winter the whole question will be solved, and this State will furnish advantages excelled, in my opinion, by none on the continent. To supply this deficiency we are trying Texas blue grass, with good prospect of success. Scarlet clover is also furnishing fine winter grass. The best acre of Bermuda grass of which I have learned brought a gross income of $96; the cost of production was nominal. I believe this can be repeated almost without limit.

Hon. J. T. Henderson, commissioner of agriculture of Georgia, says of Bermuda grass:

> While this grass requires some nursing to give it the necessary height for mowing when it is grown on uplands of moderate fertility, it invariably attains a growth on low lands, or high lands in good heart, that makes the mowing by machinery an easy matter. A peculiar advantage in growing Bermuda grass is found in the fact that in the lower portion of the State the vetch grows luxuriantly in the midst of the very thickest of the sward, while in the upper sections the white clover will also put up through the interstices of the runners, and give a good nip for the sheep or Jerseys during the winter months. The farmer of experience, who knows to his cost what it is to feed a herd of cattle during the cold weather of winter, will know how to estimate the value of a grass that men say can never be got rid of; that ties the most washing soil together; that catches and holds every particle of manure that is dropped on it; that in the lower sections of the State will give a pasture every day, and in other sections will afford it for nine months in the year; that restores a worn soil in a greater degree than the far-famed blue grass, and that on rich land will yield 20,000 pounds of hay that by a strict and most authentic analysis shows as high as 14 per cent. of albuminoids. This upon as high an authority as the late Dr. St. Julian Ravenel, makes the hay of Bermuda more valuable than that of the celebrated timothy.

He adds that there cannot be a question of its superiority as a grass and hay producer over anything known in Europe or the United States.

On the marshes of the sea-coast there is, as early as January, a tender growth which is most welcome at that season, which is so often one of semi-starvation for the stock. About two months later the piney woods sedge, the celebrated wire-grass and patches of switch cane appear in the open woods. These, together with the long Spanish moss, so abundant in the low coast latitudes, serve to keep cattle in fair condition even during the most inclement of the winter months. It is said that Spanish moss continues succulent and nourishing, and is greedily eaten by all stock in winter, and that even oxen will do good work upon a diet of this forage, when other food is not available.

The so-called "beggar's lice," of the genus *Desmodium*, grows in the lower part of the State, and its use as forage is rapidly extending. It attains a height of from 6 to 8 feet, and furnishes a large quantity of food, which is greatly relished by all hay-eating animals. Usually following spontaneously crops of corn, it really costs the land owner nothing.

In Georgia is a valuable grass, of which Hon. J. T. Henderson, commissioner of agriculture of Georgia, writes, in answer to questions addressed to him on the subject:

The grass alluded to as "crow-foot" is certainly not *Eleusine indica*, but I am unable to give the botanical name. Even Dr. Phares and Col. C. W. Howard, both standard writers, fail to identify this grass unmistakably. One peculiarity of the true crow-foot grass is that its growth is confined to the generally level, sandy soils of the Tertiary region of the Gulf States. It does not flourish in Middle Georgia. It does not grow on uncultivated lands. It does not come up until the beginning of summer, after crab-grass ceases to spring up readily. It rarely grows taller than 1 foot, is always erect, has but little leaf, or but few and short blades, and seldom branches. It is one of the unsolved mysteries of nature that anywhere and everywhere, in all the millions of broad acres of Georgia and of the South, the seeds of this grass are reposing, in a dormant state it may be, but only awaiting the call of certain conditions to bring them into active life.

Under date of July 24, 1885, Mr. Henderson says:

Referring to our recent correspondence in regard to the grass known in the South as crow-foot grass, I beg to say that I have secured a few flower-spikes from my plantation in Southwest Georgia, one of which I inclose. According to my analysis it is the *Dactyloctenium Egyptiacum* (Wood), or Egyptian grass. You will find it described at page 805 of Wood's Botany, edition of 1880. I find no allusion to it in Vasey's Agricultural Grasses of the United States, nor in Dr. Phare's book on grasses of the South—a singular omission.

I think Dr. Phares must have had this grass in view in giving the general qualities of crow-foot, but he describes the characteristics of *Eleusine indica* of a different genus. The latter is but little esteemed, as its growth is chiefly confined to hard, waste places, and is not a crop grass. As I wrote before, the *Dactyloctenium Egyptiacum* is confined almost exclusively to the southern half of Georgia, and to corresponding parts of the South Atlantic and Gulf States, and is highly appreciated by farmers as a most succulent and nutritious grass, coming up not earlier than the latter part of May and on until frost. I have known it to spring up in turnip patches sown in October in southwest Georgia.

I also inclose a specimen of flower stalk of *Eleusine indica* (yard grass). I find that Flint (Grasses and Forage Plants) ascribes to *Eleusine indica* the good qualities which are, in the South, popularly referred to the *Dactyloctenium*, and alludes to the latter as a troublesome weed. I dislike to criticise so high authority, but I think he mistakes. In Middle and North Georgia the *Eleusine indica* is commonly called crow-foot, but the other does not grow here, and I think Flint probably in error in saying that it is found in Illinois. I have found, during the current year, in Baltimore County, Maryland, what appears to be *Dactyloctenium Egyptiacum*.

Crab-grass (*Panicum sanguinale*), a native of the Old World, has spread over a large part of this country. It is most troublesome to planters in the South, forcing its way among their tilled crops, and growing with such freedom and vigor that Professor Phares, of Mississippi, says the hay which might be had from it would be worth more than the cultivated crop. In favorable seasons two mowings should be obtained. It makes hay of so agreeable a taste that horses will desert all other hay to eat of that made from crab-grass. Although it has few base leaves, and no sward is formed by it, stock greatly like the pasture it produces.

Wire-grass covers a considerable part of the State, carpeting the soil beneath the tall trees of the piney woods. It grows in bunches, like orchard grass, and appears to those who are strangers to its merits, dry, hard, as of little worth as food for stock; but it really supplies a very considerable part of the sustenance of the herds that graze on the free ranges of Georgia. The only large flocks of sheep in the State

roam over the sea-like expanse of this grass, under the forests of the pine. In these regions there are owners who number their sheep by thousands, and keep them, winter and summer, on an expense of fourteen cents, or less, per year. These men derive from their flocks large incomes as nearly without labor or care as possible in any known occupation. Mr. Henderson says of wire-grass:

> When the old stubble is burned off in the early part of the year, and the tender grass starts up, all animals running on it for pasture seem to thrive and be well satisfied. The part of the tussock that stands all winter will, in all cases, conceal under its covering a portion of tender growth that sustains the stock that range over it, during the hard times of the winter months.

Throughout the South the cow-pea (*Dolichos*) is highly valued as a forage plant. On land of fair fertility it flourishes luxuriantly, and even on poor soil it does well with little care. Its roots penetrate deeply, and loosen and enrich the ground. As forage the vines are not surpassed even by red clover, and the fruit furnishes nutritious food for man and beast. In southern husbandry the cow-pea is a most valuable aid, and to the stock-owner offers a readily grown and easily harvested provender.

In Middle and Upper Georgia herd, orchard, timothy, redtop, Bermuda, old-field, sweet and blue grasses, and red, white, scarlet and Japan clover, and other forage plants are found, including broom and other sedges. In many sections wild oats abound.

COST OF PRODUCTION.

The items which make up the cost of production of milk or of beef are interest upon the value of the land, fences, buildings, cattle, horses, wagons, and other property that may be necessary to carrying on the business; deterioration of the above in value; cost of food and attendance, and incidental expenses. The average cash value of the lands of Georgia in 1880 was $4.29 per acre. This included the value of fences and farm buildings. It is quite likely that the selling value of unimproved grazing lands of the State is about from $2 to $2.50 per acre. The wild lands of Northwestern Georgia are worth from $1 to $5 per acre, and improved lands, including pastures of cultivated grasses, are valued at $5 to $30 per acre. Interest in that part of the State ranges from 8 to 25 per cent. per annum. In Central Northern Georgia wild land ranges from $2 to $5 per acre in value, and interest at 8 to 20 per cent. per year. Cultivated lands there are quoted at $10 to $15 per acre, away from the larger towns, and from $20 to $100 per acre near the cities.

In the farming regions of Middle Georgia prices of land are about as quoted above. The low-priced lands in the State are in the southern part, where wild lands are held to be worth from 25 cents to $2 per acre. A gentleman writing from Clinch County, in the central part of Lower Georgia, says that wild grazing lands there are worth 25 cents per acre, and another who writes of the counties of Appling, Pierce, Wayne, and others in Southeastern Georgia says that lands for grazing can be bought for 50 cents per acre. Both correspondents report that interest in their respective localities is 8 per cent. per annum on real estate security. In all the southern part of the State unbroken lands are quoted as selling at $1 to $2 per acre.

In this State, favored by climate and by a spontaneous and luxuriant growth of forage, the cost of keeping milch cows is merely nominal, com-

pared with the cost of food and shelter in colder latitudes. Upon this point Mr. D. N. Sanders, of Greene County, in Central Georgia, writes:

I have carried my cows in good condition through an unusually hard winter on cotton-seed, corn-husks, and oat-straw, in addition to natural pasturage. The market value of the food would be about $3.50 per head. Deducting the value of the manure saved would make the cost almost nominal. My cattle are all stalled in a barn built of pine poles, costing not exceeding $3 per stall. When you consider that a bushel of cotton-seed, costing 10 cents, is equal in feeding value to a bushel of corn, and that the manure from a bushel of cotton-seed is well worth 10 cents, you will recognize our superior natural advantages for cattle-raising.

On the coast marshes cattle are annoyed by sand-flies and mosquitoes; in the interior only by ticks, that can be kept off at an expense of 3 cents per head. Occasionally a half-starved cow eats buckeye or other poisonous plants. With that exception I have not known one to die, unless from neglect or old age, in years. By actual experiment beef has been made in winter, on boiled cotton-seed and oat-straw, at a cost of 2 cents per pound, not counting the manure saved.

The question, "What is the present cash value, on the farm where grown, of corn in 'the ear'?" elicited the information that prices generally ranged from 40 to 50 cents per bushel at harvest time last year, and from 60 to 75 cents per bushel in winter in Upper Georgia. In Middle Georgia prices ranged from 60 to 80 cents in February last, at which time it may be assumed the supply would be as small and prices as high as at any other time in the year. In several counties prices rose to 90 cents, and in one or two to $1 per bushel.

Very few cornstalks are harvested, probably because an abundant supply of other fodder is easily obtained throughout the State, and because the mildness of the winters seem to make it unnecessary to provide any considerable store of winter food for stock. Cornstalks seem to be considered as not worth harvesting. Most correspondents report that cornstalks have no quotable cash value, but some mention "shucks" as being worth $10 per ton.

In winter hay ranges in value from $10 to $15 per ton in several counties, and reaches $25 per ton in the immediate vicinity of large towns, as Atlanta and Savannah. Bermuda grass is widely extended over the State, and it is said by excellent authority that 2 to 10 tons of hay per acre can be made therefrom per year. Other grasses and forage plants from which hay may be profitably made, grow most luxuriantly in many, if not in most, parts of the State. In view of these facts it seems somewhat remarkable that hay is not put up in such quantities and of such quality as to make the importation from other States unprofitable, and to keep prices far below those quoted. Indeed, unless the cost of making hay is very much greater in Georgia than it is in the Northern States, it would pay a handsome profit to put up hay expressly for the purpose of supplying the interior towns. People well acquainted with the conditions of agriculture in Georgia estimate that the average cost of the production of hay in that State, from fair crops of Bermuda or other grasses, is as below: Interest on the value of the land, averaging the latter at $4.29 per acre, 43 cents; cost of cutting and curing, per acre, 50 cents; of housing, per acre, 50 cents; total, $1.43 per acre. If 2 tons of hay per acre can be made, as an average, the cost per ton will be, according to the above estimate, only 71½ cents per ton, not making any allowance for the deterioration of machinery, which would make a scarcely perceptible difference per ton, if counted.

It has been shown that cattle may get the greater part of their living throughout the year from grasses that spring spontaneously from ground that has been cultivated, as well as from land that has never been broken. In cases where the stock are not fed almost the only cost

of keeping is the interest on the value of the land. If it be assumed that that value is $4.30 per acre the interest would be 34 cents per year; but the fact is that the value of the uncultivated grazing lands is not far from $2.25 per acre, on which the annual interest at 10 per cent. would be only 25 cents. But owners of cattle do not in a large part of the State own the lands over which their cattle roam. In such cases the growth of the animal costs almost literally nothing. It has been stated elsewhere that carefully-conducted experiments have demonstrated that beeves can be fattened at a cost of 2 cents per pound on cotton-seed and oat-straw, and it is a very general custom in this, as in other States of the South to send the cattle to market without feeding them with grain or other provender. In view of these facts it may be assumed that the beeves from a large part of Georgia cost as little as do those of any other region in this country. On farms the cost is largely that of the interest on the value of the land they graze upon; in the forest region, even that item is avoided by many, since they allow their stock to run on lands owned by others, as has been so generally done in the West. The Georgia cattle-owner has an advantage over the stockman of the plains, in that the latter must at considerable expense maintain a force of employés to attend to the herd, while the former needs very little aid of that kind, and that little for a short time only each year. A more considerable advantage enjoyed by the Southern cattleman is found in a complete immunity from storms which scatter cattle on the plains, frequently causing the loss of an important percentage of the whole supply on the open range.

In a letter from Mr. M. W. Stinson, of Everett Station, considerable light is given upon the cattle business of Central Georgia. He writes:

I have handled a good many cattle during the last ten years. Of these I raised some, but have bought up thin cattle and fattened them for beef, principally. The profits on fattening range from 33 to 50 per cent. I fattened a lot of 500 head during the last twelve months, and am now fattening 175 head. Beef, in common with other food, has ruled low in price for the last eight or ten months, but raising cattle still pays better than any other business, as we can place a three-year-old steer on the market for $12, and where we use improved bulls our beeves will fetch us from $25 to $30. We get, on the hoof, in the spring of the year, from 4 to 5 cents per pound.

The distance and freight charges per car-load from my pastures to the places named below are as follows: Macon 35 miles, freight $15; Columbus 65 miles, freight $24; Atlanta 135 miles, freight $45; and Savannah 235 miles, with freight at $57. Dealers in dressed beef sell at 8 to 20 cents per pound.

We never get our beeves as fat as they should be; we get only 40 to 50 per cent. net, whereas we should and could make them fat enough to net from 55 to 60 per cent of their gross weight. With cattle of the latter class our profits would be much higher than they are.

I have depended upon grazing alone to fatten my cattle, until the last two winters. I have been feeding corn, cotton-seed, peas, and oat-straw, and find it profitable. I am raising corn this season, to feed more extensively next winter. I have 7,000 acres of land under my control, 5,000 of which is fine bottom land. These lands average from 35 to 60 bushels of oats, and from 25 to 75 bushels of corn per acre, without fertilizers.

Of butter making I have done but little. What I make I sell in our home markets at 25 to 30 cents per pound. The great trouble with people here is the want of capital to work with. We own our lands, but borrow nearly all the money we use in the business, at a very high rate of interest—say from 12 to 18 per cent.

In fattening beeves corn-fodder, sorghum, cotton-seed, bran, and meal are quite commonly used by those who do not depend upon grass alone to mature their cattle. Cotton-seed sells from 10 to 20 cents per bushel. In June last, bran was bought in Atlanta for $1 and meal for 60 cents per bushel. Turnips, pumpkins, oats, maize, millet, barley, and a few other foods are used, but the cost of their production cannot be accurately ascertained at present.

In fattening, feeders give rations so varied in quantity and in composition that it is not possible to describe any as being fairly representative of a general custom. Mr. A. I. Leete, living on the line between Catoosa and Walker Counties, in Northwestern Georgia, states that an average ration for fattening cattle would be 8 bushels of corn or 6 bushels of corn-meal, 200 pounds of hay or 300 pounds of corn-shucks per month. Very few correspondents could give even an estimate, and none were willing to state definitely as to the average gain in weight which would be made by cattle fed upon such rations. Most correspondents made no reply to the questions: "What quantity of corn, of hay, of cornstalks, of other forage are usually fed per month?" and "What is the average increase in weight of fattening cattle per month?" &c. Some replied that no cattle are fattened in that way as a business.

Wages range from $8 to $15 per month, including board. One man can attend to fifty or more cattle without difficulty. Men are seldom hired to take care of stock alone, that being considered as belonging to and forming part of their usual duties.

TRANSPORTATION.

The raising of cattle for beef, as a business, has not been developed in Georgia so far as to make necessary the shipment of bullocks to markets beyond the borders of the State. In fact, the production of beef in that State appears to be so unequal to the demands of the home markets that dressed beef is sent from Chicago, at some seasons of the year, to supply consumers. For this reason rates of freight from Georgia to the great markets of the North are high, and doubtless will be so until the cattle business shall have grown so greatly that the State will have a surplus of beef for which an outside market must be sought. From Macon, in the central part of the State, to Philadelphia or to New York, the rates are at present as follows: Macon to Savannah, including transfer, $44 per car-load; Savannah to Philadelphia or to New York, including wharfage, $12.25 per head. Rates from interior points to domestic markets do not appear to be higher than the local rates by railroad in other States.

MARKETS.

Atlanta receives beeves from the northern and northwestern, the western and all of the central part of Georgia. The northeastern quarter sends its cattle to Athens, Atlanta, Augusta, Savannah, and to Charleston, S. C. Some counties in the central and the western part of Upper Georgia also find market for part of their stock in the last two named towns. They send cattle to Cincinnati and to Chattanooga, but Rome, Macon, Columbus, Dalton, and other interior towns are also furnished with beef by the sections mentioned. Jacksonville, Fla., draws some cattle from central counties, and more from some of the Lower Georgia ranges, as does Cuba also.

It is apparent, from the figures given above, that to send a car-load of beeves from Central Georgia to one of the great northern markets will cost from $220 to $245. The cost per head would be from $14.45 to $15, the higher rate being for animals of comparatively heavy weight, while the lower charge would be made upon beeves of which 20 would go in one car. The rate of $12.25 per head would operate against the shipper of light cattle to a considerable extent, since he would be required

to pay as much for carrying a scrub of 400 pounds weight as he would be called upon to pay for the transportation of the fat bullock of 2,000 pounds, if the tariff rates were exacted in both cases. The rates quoted would enable the Georgia cattle-owner to place beeves in the New York market at a total cost of about $26.50 to $27 per head. As Texas steers of probably 800 pounds weight are selling for $4 to $4.50 per cental in New York at the time of this writing, there would seem to be some margin of profit for shippers from Georgia; but that margin is so small that feed bills, yardage, commissions, and other outlay incident to the transportation and sale of live stock might absorb the greater part, if not all. Possibly this may be the reason why an export trade to the North has not become an important feature of the cattle business of Georgia. The facts mentioned in the preceding pages seem to warrant the opinion that whenever the herds of Georgia shall have increased in numbers and improved in quality a ready outlet for her surplus beeves, with sale at fairly remunerative prices, will be easily found in the larger cities of the Atlantic coast. It will, however, probably be long before any markets, other than those found in the growing cities and towns of the State, will be needed to help consume all the cattle products Georgia will have to sell.

DISEASES.

The maladies affecting the cattle of Georgia are quite generally called "murrain," which is a very indefinite term and probably covers a large number of ailments, including starvation and exposure. The descriptions given of murrain seem to afford reason for believing that the term means, in some cases at least, what is called Spanish or Texas fever. In reply to questions upon this subject the Hon. J. T. Henderson, of Atlanta, says:

> In regard to the murrain—we use very loose nomenclature, many very dissimilar diseases being included under that term. The "bloody murrain" is not a rare disease with us, though never appearing in such aggravated and extended shape as to become formidable. We do, however, have a form of cattle disease which, like the poor, we may say we have always with us. This type I do not regard as at all fixed and defined. Some call it the veritable Spanish or Texas fever; others classify it as "murrain." An unfailing trait of this disease is that it attacks at all seasons grown animals transported from northern to southern localities. By this I do not mean from the Northern or Northwestern States, but that it is a risky business to introduce here even Georgia-raised cattle from a distance of 40 miles north of Atlanta.
>
> This disease, whatever it is, does not cause lingering sickness, nor an apparently painful death. Often cattle die of it within a few days after being attacked, and when they are in excellent order. Sometimes this ailment is attended by a bloody urinal discharge; but at other times by nothing of the sort. We may say that we are never free of danger from this mysterious and baleful malady. A prophylactic used with much success is a tablespoonful at a feed of soot and slacked lime, given in meal three times per week. If there is a cure I do not know what it is.

Correspondents in several counties mention what is doubtless the disorder above referred to by Mr. Henderson. They call it acclimating fever. A gentleman writing from Paulding County, in Northwestern Georgia, says:

> All the imported Holsteins near here, except a small herd, died last year. Dairy cows were affected with "red water"; no losses. In Whitfield County, in the extreme northwestern part of the State, there seems to have been no murrain during the last twenty years previous to 1882; but in that year there were a number of cases. A gentleman in that county states that "murrain has been here fifty years, but never epizootic; always sporadic. Cannot fix any limit to murrain; extends I think to Virginia.

Yet another correspondent in Whitfield County, where a very active and intelligent interest in cattle growing is shown, says that murrain

was very prevalent last year (1884) in some localities, beginning about the 1st of August.

From Dawson, Forsyth, Gilmer, Hall, Lumpkin, and Pickens Counties reports of the appearance of "yellow murrain" were received. Overflow of gall was mentioned by a Banks County correspondent, and one who wrote from Pike County said that "a disease known as 'big gall' prevailed to some extent, but was immediately checked." "Black-tongue" was reported by several counties, including Macon, Worth and Taliaferro, and one gentleman in Marion County mentions pleuro-pneumonia as one of the maladies existing there. This is clearly an error. "Big head" (*actinomycosis*) was mentioned by two or three, but is evidently but very little known in Georgia.

With the single exception of what may be the so-called Texas fever, it is clear that the herds of Georgia are quite free from disease. The clerk of the superior court of Pierce County, in Southeastern Georgia, who is also a physician, writes as follows in reply to some questions relating to the health of cattle in that region:

In this part of Georgia, belonging to the long-leaf pine belt, the soil near the water-courses is sandy, slightly rolling as to surface near rivers, but otherwise low and flat. None of it is rich, and clay is not found generally near the surface. We live in the wire-grass region, upon which the stock graze, and where hogs are raised on the palmetto, roots, bulbs, berries, and other things of that nature found in abundance here. The woods are generally burned off every spring—a bad practice—in order to promote the growth of the wire-grass.

We have never a scarcity of water for stock, the country abounding in creeks, rivers, branches, lakes, and ponds in this section, extending from Altamaha to the Withlacoochee. The water, let it stand ever so long, never becomes putrid or impure, and you will scarcely ever find upon its surface or around the edges those fungous growths, green and sickly looking, which are invariably to be found in waters standing or sluggish, which have their origin in a clay region or run through clay soil. Therefore, our section is almost entirely free from diseases originating from malarial causes, chills and fevers being very rare. Our water supply is generally very copious and pure, and our cattle are scarcely ever diseased. I do not know that for the period of twenty years, the time of my residence here, an epizootic of any kind has been known in this section. Our cattle die from want of attention. This winter the loss has been very great, as the winter was quite severe, and many cattle perished from cold and starvation.

ILLINOIS.

As a whole, the surface of the State of Illinois is nearly level. The prairie regions which cover a large part of the State are only slightly rolling, except in those places where streams have worn valleys. These are shallow in the eastern and the northern parts of the State, deepening gradually as the great rivers are approached. Nearly all the waters of Illinois find their way to the Mississippi. Beside that river, as also along the larger streams of the State, the lands are cut into abrupt bluffs, or sharp spurs which, nearing the sources of the streams, gradually become softened into rounded hillocks, sinking at last into the low banks. Through such waterways as these form, flow streams usually gentle in current, often sluggish, and sometimes becoming even stagnant. Over a large part of the State, ponds and "sloughs," or marshes, formerly abounded. In these the water was renewed only by the rains that fell occasionally. Under hot suns these ponds, having neither inlet nor outlet, quickly became foul, particularly where stock resorted to them to drink and cool themselves, as they did almost universally throughout the State a few years ago, and do even now in some parts. For years such ponds furnished the principal, almost the only, water

supply for stock in large areas of this State. The constant use of such impure water greatly injured the quality of the milk and butter of cows, and doubtless had a baneful effect upon the health of the animals that drank the foul water and those who used the milk and butter. With the drainage of the land and the introduction of a pure supply of water, came the disappearance of certain diseases of cattle and of human beings, particularly the so-called milk sickness and kindred maladies, and a marked improvement in the flavor and keeping qualities of milk and butter. Although the change thus caused has been great, there are yet districts in which there has been little improvement in the conditions of the land, of the water supply, or of the people. Stock are still compelled to depend for their water supply upon streams and pools that almost invariably become stagnant in the warm and dry days of the latter part of summer, each year. Inquiries addressed to hundreds of intelligent and careful observers, nearly all of them practical stockmen, elicited information showing that in the eight counties comprising the northwestern postal district of the State streams and wells form the chief sources of water supply for cattle, while springs form a considerable part of that supply. Few ponds are used, and only eleven of twenty-three correspondents who mention the sources of water supply state that tile drains are depended upon to furnish water for stock. In the central northern counties wells form the chief dependence, but springs, streams, and tiles are utilized to a considerable extent, and about equally for this purpose. In the northeastern counties streams, wells, and springs are equally depended upon for stock water. In the eastern counties wells form the chief source; streams come next in importance, ponds and tiles follow, while only nine correspondents mention springs as furnishing water. In the central counties forty-nine districts report that supply is from wells; forty from streams, thirty-five from tiles, twenty-five from ponds, and twenty-four from springs. In the western counties streams, wells, and tiles are used to equal extent, springs are next, and ponds are used in quite a number of districts. Of correspondents in the four southeastern counties all report that stock get their supply of water from ponds and streams; six report that wells are also used; five write of springs, while only four mention the use of water from tile drains. In twenty-one central southern counties ponds furnish the chief dependence of stock for water; streams come next in importance; next in value in the order in which they are mentioned are wells, springs, and tile drains. In the southeast and western counties a like condition exists.

From all parts of the State correspondents write that the ponds and streams become stagnant in the warm months of summer, a few making exception of those years in which the rainfall has been heavy during the summer months. Stagnant water is found more generally in the southern than in the northern part of Illinois; chiefly, perhaps, because the cultivation and drainage of the land has not become so almost universal as it has in the northern districts.

In several counties artesian wells afford a most copious supply of water of good quality. In Iroquois and other eastern counties such wells have been bored to a depth of from 150 to 200 feet, and obtained an unfailing flow of water impregnated with minerals. Stock show a strong liking for such water after becoming accustomed to its use, and it is the belief of those who have had opportunity for observing the effects of its continued use, that this mineral water serves to keep the animals free from disorders which formerly prevailed in that region. This seems to be especially apparent in regard to malarial disorders.

The rainfall in the State of Illinois has been quite evenly distributed throughout the several months of the year, and also comparatively equally throughout the years from 1878 to 1884, both included.

The subjoined table, condensed from a number of statements prepared by the Illinois State Board of Agriculture, shows the quantity of rainfall for each month since the beginning of the year 1878:

Precipitation in Illinois.

Years.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
1884	1.21	4.03	2.81	2.81	4.27	5.05	4.50	2.60	4.83	3.39	2.13	5.46	42.89
1883	1.87	6.55	1.63	4.17	5.45	5.75	4.83	2.13	1.16	6.55	5.07	2.26	47.13
1882	2.41	4.80	4.47	3.75	6.70	7.58	3.55	4.20	2.04	3.85	2.64	2.33	48.95
1881	1.49	4.68	3.89	2.49	2.35	6.52	2.64	1.04	4.20	6.60	4.63	3.17	43.26
1880	3.36	2.71	2.78	3.79	5.34	3.71	3.08	3.80	3.56	2.34	2.34	1.58	38.30
1879	1.61	1.64	2.26	2.02	2.41	3.88	3.62	4.12	1.59	1.97	4.30	2.87	31.37
1878	1.46	2.31	2.69	4.15	5.30	3.11	2.97	4.20	3.30	3.85	1.68	2.52	38.41
Average	1.91	3.82	2.93	3.60	4.55	5.09	3.60	3.16	2.95	4.08	3.26	2.88	41.47

The record above presented shows that the greatest rainfall in any one of the seven January months under consideration was 3.36 inches, or 379.68 tons of water per acre; the smallest rainfall was 1.21 inches, or 176.73 tons per acre. June has been the month of the heaviest rainfall, the average for that month during the several years covered by the table having been 5.09 inches, or 575.17 tons per acre. The several seasons show the following general averages for the seven years: Winter, 8.61 inches, or a monthly average of 2.87 inches; spring, 11.08 inches; summer, 11.85 inches; and autumn, 10.29 inches. The extreme difference between the averages of any two seasons was 3.24 inches, or 366.12 tons per acre, between summer and winter. The general average per month for the whole seven years was 3.46 inches, or 390.53 tons per acre; this was 174.7 tons more than the smallest, and 184.64 tons per acre less than the greatest average monthly rainfall. The rainfall bears directly upon the interests of the cattle owner in several ways too plainly apparent to require detailed mention. Enough has been given above to show that Illinois is fortunate in having comparatively little wet weather in autumn and winter. Heavy rains in the cold months cause the consumption of large quantities of food by stock without a corresponding increase in flesh or yield of milk. Dry weather, on the contrary, even though quite cold, serves to increase the vitality of animals and stimulate their appetites, and they grow rapidly in weight.

During the year 1884 the total snowfall in the northern part of the State, as reported to the Illinois Department of Agriculture, was 27.74 inches. This ranged from 0.69 inches in November to 9.02 inches in December. In the central division of the State 34.94 inches of snow fell during the five winter months; in the southern division the snowfall amounted to 26.95 inches, or an average of 5.39 per month. These figures show that in the whole State the snowfall reached the average total depth of 29.88 inches, or a monthly average fall of 5.98 inches.

The records of temperature for the several months of the year 1884 show that the lowest point reached in the northern division was 28°.95 F. below zero; the highest point in that division was 91°.07 above. In the central part the lowest temperature was 26°.23 below,

and the highest 94°.08 above, while the mean was 50°.84. In the southern part the lowest temperature was 22°.44 below, the highest 95°.01 above zero, the mean temperature having been 54°.68 F. The extreme range was 120°.12 in the northern, 120°.31 in the central, and 117°.45 in the southern part of the State. The heat is tempered by fresh breezes which, in summer, blow strongly over the prairies nearly every day. In winter biting northwest winds sometimes sweep over the State for days in succession, but this does not seem to seriously injure stock. It may be questioned whether the certainty that very cold weather will be encountered is not an actual benefit to the stock-owner in one sense. It certainly leads owners to provide better shelter and food, and to give closer attention to stock than many owners would provide if the winters were usually mild. It is well known by observant feeders that in winters when the weather is steadily cold, cattle, swine, and sheep thrive better than they do in seasons when snow and rain, freezing and thawing weather alternate. This is particularly true of stock fed in fields, one reason being that in such instances much food is lost in the mud, or becomes soiled, so that the cattle and sheep will not attempt to eat of it, and swine lose a considerable part of that thrown on the ground.

A few years ago almost the whole of the middle and the northern parts of Illinois were covered by a rank growth of native grasses, which furnished an ample supply and variety of forage of fair quality. In the southern districts were heavy forests, but in the central and the northern sections were but few groves or other timber growths to afford shelter to stock. The general fencing and cultivation of the lands put a stop some years ago to the burning of the dead grasses of the prairies. Groves of oaks have since sprung up, and now cover many uncultivated spots, and are growing thriftily, the leaves which stay on the trees until spring making such groves valuable as shelter from winds.

Despite the seemingly adverse character of the climate, Central and Northern Illinois has been for some years little, if any, behind other parts of the Union in stock-growing. In 1850 this State stood sixth among the States in the volume of their supply of milch cows, and seventh as to the number of working oxen and other cattle. In 1860 this State was tenth in the list in the number of her working oxen, fifth in that of milch cows, and second as to other cattle. In 1870 the State was twenty-sixth in the list as regarded her working oxen, fourth as to milch cows, and second in her supply of other cattle. In 1880 Illinois stood yet lower in the list of States in respect to working oxen, having then ranked as thirty-sixth; but the State was then second as regarded milch cows, and third as to her supply of other cattle. Iowa then had 240,280 more cattle than Illinois had, and at the same time the supply of cattle in Texas exceeded, by some 1,812,860 animals, the number then in Illinois.

The growth of the cattle interest in Illinois may, perhaps, be most clearly shown by a summary of the statistics relating to this industry which have from time to time been gathered. The first figures of value on this subject were those of the United States Census of 1850. The United States Patent Office Report of 1849–'50 said, on page 294:

> The statements received from our correspondents on the above subjects are of too vague a character to form the basis of any correct estimates as to the number of horses, cattle, &c., in the United States. The census of 1850 will furnish more accurate and reliable information on this head, which will be looked for with interest by farmers and others in all parts of the country.

In that census report the number of cattle in the State of Illinois was given as being 912,036. That was 1,071.1 cattle for each 1,000 inhabitants then in the State. Ten years later the total number of cattle in Illinois was 1,583,813, or 925.1 per 1,000 inhabitants. That was an increase of 73.6 per cent. in the number of cattle, with a decrease of 13.6 per cent. in the supply per 1,000 people during the first decade recorded. The accompanying table shows that there was an increase of 8.3 per cent. in the second decade in the number of cattle; of 38.9 per cent. in the next following ten years; of 17.9 per cent. in the next three years, and a decrease of 6.5 per cent. in 1884.

CATTLE SUPPLY OF ILLINOIS.

Years.	Milch cows.			Working oxen.			Other cattle.			Total.		
	Number.	Population.	Increase.	Number.	Population.	Increase.	Number.	Population.	Increase.	Number.	Population.	Increase.
1884	919,404	342.3	17.7	.....	.....	.....	1,471,191	.....	.....	2,390,595	.....	.....
1883	*716,102	290.0	.....	.....	.....	.....	*1,253,765	.....	.....	*1,969,867	.....	.....
1880	865,913	281.4	35.2	3,346	1.1	.....	1,515,063	492.2	43.5	2,384,322	774.7	38.9
1870	640,321	252.1	22.5	19,766	7.8	.....	1,055,499	415.5	8.7	1,715,586	675.4	8.3
1860	522,634	305.3	77.3	90,380	52.8	18.3	970,799	567.0	79.4	1,583,813	925.1	73.6
1850	294,671	346.1	.....	76,156	89.4	.....	541,209	635.6	.....	912,036	1,071.1	.....

*From returns by assessors. The figures doubtless fall considerably below the actual numbers, as the returns by assessors do nearly always. In 1860, for example, the Illinois assessors reported 157,835 fewer cattle than were reported by the United States census report for that year. In 1870 the number returned by the assessors was 137,571 less than the total for the State as given by the United States census report, and in 1880 that report returned 384,534 more cattle for the State of Illinois than the assessors of that State did. It is, therefore, clearly not unlikely that the number of cattle in the State in 1884 was fully 2,350,000.

The number of cattle of each class for each 1,000 inhabitants of the State is given in the first of the narrow columns. In 1850 the supply of cattle in Illinois was equal to 346.1 cows, 89.4 oxen, and 635.6 other cattle per 1,000 people, or an average of a little more than 1 animal per capita of population. For several years the growth in the population of the State was relatively greater than the increase in the number of cattle, although the supply of cattle increased 73.6 per cent. during the decade ended in 1860, and 8.3 per cent. in the ten years between 1860 and 1870, a period during which the civil war made such heavy drafts upon the cattle supply that growth in that supply was well nigh impossible.

The table given above tells in brief the story told by the live stock of nearly every other State in the Union, of the steady and rapid shrinkage in the supply of working oxen. There can be no doubt that before the end of the current decade yoke cattle will have practically disappeared from all of the States except one or two. Such cattle are now known in only a few localities, chiefly in heavily wooded or in hilly regions.

In the work of improving her cattle Illinois leads all other States, excepting Kentucky and Ohio. Of the cattle in Illinois 35 per cent. are "high grades," as those are called in which the blood of purely-bred animals has had a strong influence for improvement. Of the cattle of the other two States named 40 per cent. were "high grades." In Iowa 21 per cent. were improved by the influence of the blood of pure-bred animals. The average value of the milch cows in Illinois in 1884 was $35, and of oxen and other cattle it was $28.04, while the average value of the milch cows of Iowa was only $31.75, and of other cattle it was $26. To the blood of the shorthorns more largely than to that of any other race the improvement of the cattle of Illinois has been due. The first, and for some years the only, representatives of pure races of cattle in this State were shorthorns, and to this day animals of that breed, or "grades" gotten by them, exceed all others in numbers in this State. No other breed is so generally known by farmers and others, and as a consequence there is not a single county in Illinois in which there are not representatives of the race. Nearly every county has one or more herds

of purely-bred shorthorns. Correspondents writing from two hundred and forty-four different points in the State mention that breed as having been largely used in improving the stock of their several localities.

Next in importance, so far as numbers are concerned, to the beef producing interests of Illinois, are the Herefords. Some eighty correspondents report that animals of that race are in use in the districts covered by their replies. Aberdeen-Angus cattle come next in point of numbers, representatives of that breed being present in twenty-eight different localities. Devons are mentioned by seventeen correspondents, and Galloways by only three. The distribution of the influence of the several races of pure cattle in Illinois is shown, with some approximation to the truth, by the fact that in the northwestern counties reports from twenty-seven different points mention shorthorns, nine write of Herefords, and five of Aberdeen-Angus herds. In the northern counties thirty-four say that shorthorns are in use, thirteen mention Herefords, five tell of Aberdeen-Angus, four of Devons, and two of Galloways. In the northeastern corner of the State, thirteen write of shorthorns, seven of Herefords, four of Aberdeen-Angus, and two of Devons. Of correspondents in the western counties thirty-two write of shorthorns, eight of Herefords, five of Aberdeen-Angus, four of Devons, and three of Galloways. From the central part of the State fifty-five points report the presence of shorthorns, twenty of Herefords, three of Aberdeen-Angus, and one of red polled Norfolks. Of western points twenty make mention of shorthorns, fourteen of Herefords, and seven of Aberdeen-Angus. In the southwestern counties nine points have shorthorns, one has Herefords, one has Aberdeen-Angus. Forty-four points in the southern counties have shorthorns, six have Herefords, three report having Devons, while one correspondent, Mr. W. D. Hills, of Odin, Marion County, mentions a Dutch Belted herd. The southeastern corner of the State has shorthorns herds in at least ten places, two herds of Herefords, and two of Devons.

Next to the shorthorns in popular favor, of recent years, have been the Jerseys. Correspondents writing from one hundred and sixty-eight different points mention cattle having the blood of the Jerseys as being among those making up the supply in their respective localities. Of those correspondents eleven were located in the northeastern corner of the State, twenty-two were in the northern counties, fifteen in the northwestern corner, and twenty in the western counties, thirty in the central, sixteen in the eastern counties, eight in the southeastern, thirty-eight in the southern, and eight in the southwestern counties. The fact that the first cases of contagious pleuro-pneumonia ever known west of the Alleghanies were in herds of purely-bred Jerseys served to check the demand which had existed for Jersey cattle in the West. An idea that cattle of this breed are more subject than others are to attacks of fatal contagious or infectious diseases became widely disseminated. That idea is still entertained by some people in the West, one result being that comparatively few farmers now seek for Jerseys with which to improve their stock. Young bulls of good breeding, of this race, may be bought for little more than the value of veal calves of like weights. The prejudice against the Jerseys appears to be passing away, however, and there is reason for believing that but a short time will pass before they will again be sought largely for the purpose of increasing the butter-producing capacity of the cows of the West. Holstein-Friesian cattle have been much sought of late by the farmers of Illinois. The demand for them has naturally been more active in those parts where milk in its natural state finds ready sale than it has been in districts where the

production of beef is the chief purpose of the stock-owner. The large yield of milk by cows of that breed makes them of very high value to people living in or near towns. Correspondents writing from seventy-seven different points in Illinois mention the existence of Holstein-Freisian cattle in their respective neighborhoods. Of those points five are in the northeastern counties, eighteen are in the northern, eleven in the northwestern, thirteen in the western, nine in the central, ten in the eastern, seven in the southern, and four in the southwestern counties. The southeastern counties alone report the possession of no cattle of this great milking race.

Ayrshire cattle were at one time comparatively popular in Illinois, and purely-bred animals of that race were found at several places scattered through the State. Of late years, however, the breed seems to have lost favor, and quite well bred Ayrshires have been offered to the writer, within the last three years, for prices little if any above those for which milch cows of common or native blood were selling at the time. Only six correspondents mention the Ayrshires as having been introduced. It should not be understood that the number of Ayrshire herds in the State is limited to six, for it is quite likely that Ayrshire cattle may be in use in the districts from which no reports of their presence have been received, but the number of correspondents who mention the stock may be accepted as indicating fairly the estimation in which the breed is held by the people generally. The same may be said of the other breeds named therein.

BEEF PRODUCTION.

Almost from the beginning of the cultivation of the land in Illinois by white men the production of beef has been one of the most important branches of the agriculture of the State. The luxuriant growth of grasses which covered the broad prairies afforded an inexhaustible supply of forage and served to foster the growth of the cattle-growing industry. The facilities for transportation of beef to market, by river in the south and on the west, and by the lakes to the north, helped to stimulate the business of raising cattle, as did also the demand for stock incident to the settlement of the country west of the Mississippi River. The influences named above still act to a considerable extent in favor of the cattle-owner of Illinois. The development of the cattle industry of the plains beyond the Mississippi River created a strong demand for bulls of pure blood, with which to improve the stock of that vast region, and cattle breeders of Illinois have been called upon, perhaps to a greater extent than those of any other State in the Union, to supply the demand. The market thus afforded for bulls of good breeding has been of almost incalculable value to the breeders as well as to the general cause of improvement of cattle in the West. The range cattle business has also been of value to the general farmer in so far as it has created a market for young cows and heifers to be taken to the plains for the purpose of breeding. Many young steers have also been taken from Illinois to graze and fatten on the ranches.

The completion of lines of railroad connecting Illinois with the towns of the Atlantic coast stimulated the cattle business of the State greatly by furnishing means for placing beef before consumers in the East quickly and at a cost much less than that of the old way of driving the stock long distances. By the latter method there was a great shrinkage of weights of the stock during the tediously protracted journeys; and the beef of the driven animals was far inferior in quality to that of

cattle killed near their grazing grounds. The establishment of commodious stock-yards in this State, in which all needed conveniences for the transaction of the business of selling, shipping, and slaughtering of stock of all kinds used for food has done much for the development of all branches of the live-stock industry, especially of cattle growing and of swine breeding.

In 1850 the United States census report said:

> Illinois alone now sends to the great market of New York an average of 2,000 head of cattle weekly, and other States comprising regions almost unknown at the former census, and still more distant from the seaboard, are aiding and increasing their contributions.

The causes mentioned above as having combined to aid the growth of the live-stock industry of Illinois also helped the like interests of the States and Territories west of the Mississippi River, until now a great part of the civilized world receives from, if it does not depend entirely for a considerable part of its supply of meats upon, those States and Territories which were so nearly unknown in 1840, and of the food-producing capacity of which so little that was of real value was known in 1850.

In the year 1850 the total number of cattle in this State was 912,036. Had all of those cattle been slaughtered at the time, and had they dressed 450 pounds of beef net per head. they would have furnished enough beef to average 482 pounds for each inhabitant then in the State. Making due allowance for the improvement made in cattle since that time, the entire supply of cattle in Illinois in the year 1880 would have furnished 480.3 pounds of beef for each inhabitant of the State at that time, had each animal dressed 620 pounds of net beef. The population engaged in agricultural pursuits in 1880 numbered 436,371, leaving 1,832,944 persons over ten years old engaged in other occupations. There were that year in the State 472.4 milch cows and 826.6 other cattle for each thousand population over ten years old who were engaged in occupations other than farming, while for each person over ten years old then engaged in agriculture there were 5.46 cattle, of which 1.98 were milch cows and 3.48 other cattle. In 1870 the supply of milch cows per 1,000 of population over ten years of age engaged in occupations other than farming was 353.7, while the supply of other cattle per 1,000 people over ten years old at that time was 594.1. At that time there were of milch cows in the State 1.7 for each person over ten years of age engaged in agriculture, and 2.86 other cattle for each person of the occupation and age mentioned. Of the latter class there were in the State 376,441 and of the other there were 1,809,606. If all the cattle other than milch cows in Illinois in 1880 had been available for use as beef, and had made an average of 400 pounds of net beef, the average supply for each non-producer would have been 330.6 pounds.

The actual yearly production of beef in Illinois has been calculated closely by the State Department of Agriculture, and the result is presented in the subjoined table, which gives also the number assessed each year, their weight and value, together with the value of the beeves sent to market. In late years the value of cattle has been assessed at one-half of the market value of the stock at the time.

Annual production of beef.

Year.	Assessor's returns.		Estimated per cent. marketed.	Number beef cattle marketed.	Average gross weight per head.	Total gross weight.	Value per 100 pounds gross.	Value beef cattle marketed.
	Number.	Value.						
1856	1,169,855	$15,572,065	20	239,971	*1,000	233,971,000	*$4 75	$11,113,622
1857	1,351,209	16,171,830	20	270,242	*1,000	270,242,000	*4 75	12,836,495
1858	1,422,249	44,442,821	20	284,450	*1,000	284,450,000	*4 75	13,541,375
1859	1,336,565	12,371,600	20	267,513	*1,000	267,513,000	*4 65	12,706,867
1860	1,425,978	12,468,537	20	285,196	*1,000	285,196,000	*5 00	14,259,800
1861	1,428,362	11,494,803	20	285,672	*1,000	285,672,000	*5 00	14,283,600
1862	1,603,946	11,032,062	20	320,790	*1,000	320,790,000	*5 00	16,039,500
1863	1,684,892	12,699,732	20	336,978	*1,000	336,978,000	*5 00	16,848,900
1864	1,370,783	13,709,418	20	374,157	*1,000	374,157,000	5 05	13,844,928
1865	1,568,280	14,285,862	20	213,656	*1,000	213,656,000	5 70	12,178,392
1866	1,435,769	13,279,620	20	287,154	*1,000	287,154,000	5 60	16,080,626
1867	1,486,381	17,179,165	20	297,276	*1,000	297,276,000	5 75	17,093,370
1868	1,520,963	15,810,830	20	304,195	1,085	340,049,405	5 75	18,977,840
1869	1,584,445	15,497,350	20	316,889	1,103	346,528,567	5 70	19,923,130
1870	1,578,015	14,555,331	20	315,603	1,110	350,319,330	5 85	20,493,679
1871	1,611,349	14,605,415	20	322,270	1,129	363,842,830	4 75	17,282,533
1872	1,684,029	14,778,925	20	336,809	1,137	382,948,422	4 85	18,572,997
1873	2,015,819	35,776,899	20	403,164	1,145	461,622,780	4 50	20,773,026
1874	2,042,327	31,928,374	20	408,465	1,152	470,551,689	4 85	22,821,757
1875	1,985,155	28,323,950	20	397,031	1,147	455,394,557	4 85	22,086,633
1876	1,857,301	24,827,932	20	371,460	1,156	429,407,760	4 05	17,891,016
1877	1,750,931	21,677,643	24	423,984	1,097	448,151,088	4 25	19,046,421
1878	1,775,401	19,861,633	20	357,816	1,021	365,458,112	3 45	12,608,304
1879	1,862,265	18,893,811	24	457,331	980	448,463,450	3 50	15,696,219
1880	1,990,788	19,895,484	23	473,727	1,042	493,554,661	3 64	18,014,743
1881	2,045,366	20,528,846	23	470,424	1,129	531,280,052	4 15	21,950,890
1882	2,012,902	20,497,966	23	462,943	1,118	517,619,770	4 45	23,135,715
1883	1,959,867	20,581,411	23	453,055	1,062	481,144,410	4 25	20,448,637
1884	1,990,927	20,176,698	23	457,887	1,093	500,412,461	4 50	22,521,246

* Estimated.

Commenting upon the facts shown by the above table, the Hon. Charles F. Mills, secretary of the Illinois State Board of Agriculture, remarks that the increase in the number of cattle over that of 1883 was 21,060, and that the depressed condition of business generally throughout the country had much to do with causing the depreciation in the aggregate valuation of the cattle in the State. In 1884 the average number of cattle per square mile in the State was 36, which was 2 per square mile more than there were in 1883. The number of cattle per square mile in each of the several counties in 1884 were as follows: Kane, 93; McHenry, 78; De Kalb 72; Boone, 70; Du Page, 68; Ogle, 66; Stephenson, 65; Jo Daviess, 64; Winnebago and Peoria, 63; Carroll, 61; Kendall, 59; Mercer, 58; Knox, 56; Whitesides, 55; Henry, 53; Lee, 50; Cook and Lake, 49; Rock Island and Will, 48; La Salle, Stark, and Warren, 47; Bureau and Sangamon, 46; Douglas and McDonough, 45; Edgar, 44; Grundy and McLean, 43; Coles, Hancock, and Henderson, 42; Fulton and Putnam, 41; Iroquois and Marshall, 39; Schuyler, 38; De Witt and Vermilion, 37; Woodford, 36; Edwards and Macon, 34; Christian, Livingston, Moultrie, and Tazewell, 33; Menard, Morgan, Piatt, and Shelby, 32; Brown, Champaign, and Green, 31; Kankakee and Macoupin, 30; Adams, Cass, and Logan, 29; Montgomery and Scott, 25; Clark, Cumberland, Ford, Hamilton, Jasper, Lawrence, and Pike, 24; Clay and Wayne, 23; Effingham, Jersey, Richland, and White, 22; Marion, 21; Crawford, Fayette, Jefferson, Union, Wabash, and Williamson, 20; Bond and Madison, 18; Gallatin, Pope, Randolph, and Saint Clair, 17; Franklin, Hardin, Pulaski, Saline, and Washington, 16; Jackson, 15; Clinton, Johnson, and Massac, 14; Alexander, Mason and Perry, 12; Calhoun, 11; Monroe, 10.

From the statement made by the Illinois State Board of Agriculture, as quoted above, it appears that the output of beeves for the year 1880 was 493,554,661 pounds gross weight. It may be safely estimated that the net weight of beef from those cattle was not more than 56 pounds per 100 pounds of gross weight. That would give an aggregate of 276,390,610 pounds, which would afford an average of 121.8 pounds of beef per capita of population. In 1870 the gross weight of the beeves sent to market by Illinois farms, as shown by the table given, was 350,319,330 pounds. Assuming that of the weight 54 per cent. was net beef, the total net meat thus marketed was 189,172,238 pounds. That was equal to 173.6 pounds of beef for each person over ten years old in the State at that time.

The estimated gross weight of the beef marketed by the farmers of Illinois in the year 1860 was 285,196,000 pounds. This, it may be assumed, gave 154,005,840 pounds of dressed beef, an average of 89.1 pounds for each person then in the State. In 1860 there were produced enough to give each inhabitant in the State a little more than one-quarter of a pound of beef per day; in 1870 the supply had increased to 0.48 pounds per day; while in 1880 it was only 0.33 pounds per day for each person over ten years old.

From the report quoted it appears that in the last twenty-nine years there were sent to market from Illinois farms 10,196,107 cattle of a total gross weight of 92,643,804,345 pounds. The yearly average number of beeves thus marketed was, for the period mentioned, 351,590, which probably averaged 490.6 pounds of net beef each, making an average yearly total of 1,725,091,529 pounds.

The cost of the production of beef in the State of Illinois varies somewhat in different localities, but the difference is nearly if not quite equalized by the difference in rates of transportation to market. The elements which go to make up the total cost of beef production are the value of the food given, cost of maintenance of horses, men, wagons, and other things needed for properly caring for the stock, deterioration in value of the breeding stock and interest upon the investment in land, cattle, horses, and food. The income is the money received for the beef made, and the fertilizing material left upon the land. The last-named item is seldom taken into account by many farmers, further than to consider, in a general way, that it should be equal to the cost of maintenance of teams and men required for caring for the cattle.

In 1884 the land which was planted to corn in Illinois amounted to very nearly 20 per cent. of the entire acreage of the State. In oats, there was 8.53 per cent.; in timothy meadow, 6.58 per cent.; in clover meadow, 9.1 per cent.; 1.19 per cent. was prairie meadow; 14.74 per cent. was in pasture; 10.2 per cent. was in woodland, in which cattle might gain some sustenance; and of uncultivated land there was 5.46 per cent. The average value of land in Illinois per acre in 1884, as determined by the State board of equalization, was $20.80; but this price is much below the market value, as is generally the case where lands are valued for taxation. Reports made by correspondents who represent every part of the State place the value of the farming lands at prices ranging from $8 to $100 per acre. In the central part of the State prices as given were generally from $40 to $60 per acre, in a few cases rising to $100, and in a still more limited number going as low as $10. The legal rate of interest in this State is 8 per cent., but many correspondents state that on loans secured by a mortgage on cattle or on lands 6 to 7 per cent. are the current rates. A few say that 10 per cent. is paid in some cases; but this high rate is given in only one or two

counties. The average rate of interest in the State would probably be 7 per cent.

The cash value of corn in the ear in the early part of the year 1884 ranged from 25 to 50 cents per bushel; nearly all localities, however, gave 30 cents per bushel as the average value on the farm of corn in the ear. Cornstalks were worth from 10 cents to $1 per acre. The greater part of the reports give 25 cents per acre as the average value of cornstalks in the field; but the general average price was doubtless nearer 40 cents than 25 cents. Hay sold at prices ranging from $4 for that made from native grasses to $10 per ton for timothy. The latter price was obtained, however, only in localities near large towns. The average worth of hay throughout the State at the time mentioned was about $7 per ton. In 1884 hay averaged $5.45 per ton. Straw ranged in value, on farms, from 50 cents to $4 per ton, $3 being probably very near the general average price.

In answer to the question, "What is the cash value of pasturage per acre per month?" correspondents give answers covering very wide range, some saying that pasturage could be had for 25 cents per acre per month, while others give $4 per acre. This, however, is doubtless an error. The correspondents probably mean, as some of them certainly did, that $4 per head for the season was charged. Lands can be rented, even in the vicinity of large cities, for an annual rental of from $2 to $5 per acre, even where buildings and fences are in good order.

As a general rule, one-half bushel of corn per day, or 15 bushels per month, is fed to steers being fattened for market. Of hay, from 300 to 1,000 pounds are fed to each steer, the probability being that 500 pounds per month will be very near the average amount fed to fattening cattle. When cornstalks are fed, or cattle have access to fields of cornstalks, the quantity of hay is materially reduced, and in some cases the hay ration is entirely cut off. Very little other forage is furnished to fatten cattle in the State, and of grain, other than Indian corn, scarcely any is fed. It will, therefore, be safe to assume that the general average rations of fattening bullocks in this State are fully represented as to quantity and cost by those mentioned above—namely, 15 bushels of corn and 500 pounds of hay per month. Upon such rations as these the cattle make in weight an increase of from 40 to 100 pounds per month, 75 pounds being a fair average. Many fail to get more than 50 pounds, and some reach 90 to 100 pounds. The best results seem to be obtained in the central and northwestern counties, as the reports from those districts agree that the gain in weight of fattening cattle reaches from 50 to 75 pounds. The average increase in the weight of fattening cattle for each bushel of corn fed to them while upon pasture, is said to be from 3 pounds to 10 pounds, a few stating that they can make their cattle gain 15 pounds per bushel upon grass. When not upon pasturage the increase in weight ranges from 1½ pounds to 6 pounds per bushel of corn fed. Some say that they can make as high as 12 pounds per bushel: It is likely that 6 pounds will fully equal the general average gain in weight for each bushel of corn fed to cattle in this State.

In reply to the question "What difference is there between yearling, two-year-old, and three-year-old bullocks in the increase from a given quantity of food?" the answers were not very definite. Most correspondents agree that the younger animals make the greater increase in weight. A few reply that there is little or no difference. The general preference is in favor of young stock especially for two-year-olds, for grazing and for feeding. Some thought that yearlings would make from 3 to 4 pounds more per month than the three-year-olds. Others

stated that the difference in favor of yearlings was 7 pounds per month, two year-olds, 5 pounds per month, while three-year-olds would make 4 pounds per month more than cattle of greater ages. These correspondents place the average gain in weight per month of cattle over three years old at about 46 pounds, of two-year-olds at 55 pounds, and of yearlings from 62 to 65 pounds. In addition to the food mentioned above, oats, oat-meal and oil cake, shorts or other mill offal, a little rye, some barley, and a small quantity of the refuse from glucose factories, have been fed.

The average cost of attendance per head of cattle in winter, including wages, maintenance of men and of horses, and other teams used in hauling food for cattle, ranges from 1 cent to 5 cents per head per day. This cost depends largely, of course, upon the amount of cattle being fattened together. One man and a team can feed two car-loads of cattle about as easily as they can feed one car-load. A large number of practical feeders of stock give the cost per month of the above items, as ranging from 30 cents to $1 per head. It is quite likely that where three or four car-loads are fed together the cost of attendance would not exceed 40 cents per month per head. Some of the more careful and exact correspondents express the belief that the cost of attendance would be amply compensated for by the enrichment of the land upon which the cattle are fed. In regard to the cost of attendance in summer there is a wide difference of opinion. Some say that the cost is about the same in summer as in winter. Many think that it is but one-fourth or one-third of the cost of attendance in winter, while others give the cost as being nothing beyond the expense of salting. It is evident, however, that where cattle are fully fed with grain on the pasture, the cost of attendance cannot be much smaller than one-half that of winter attendance.

In all the central part of the State cattle are not housed or sheltered in winter. In about one-half of the districts in the northwestern counties from which correspondents write, shelter is provided. The same is true of the northern and northeastern counties.

The middle, eastern, and western counties allow their stock to run unsheltered throughout the year. In the southern counties about one-half of the stock seems to be sheltered. In every part of the State hogs are allowed to follow and feed with cattle that are fattening. The corn dropped by the cattle is eaten by the hogs, and waste is in that way prevented. The average growth of pork made from each bullock by swine that follow cattle ranges from one-half pound per day to 2 pounds per day. The latter growth could only be possible where heavy rations of corn are fed. The average total growth of hogs during the six months they follow cattle is about 300 pounds, or 50 pounds per month.

The question, "What, in your opinion, are the relative advantages or disadvantages of summer feeding and winter feeding?" elicited a variety of opinions. A large majority of feeders seem to believe that summer feeding is twice as profitable as winter feeding, saying that the cold weather of winter demanded a large outlay of food to sustain animal heat without a corresponding return in growth. Many said that cattle would grow one-third faster on summer feed than in the winter. Some correspondents think that feeding in summer is cheaper, but that the beef grown in winter is better, and that the prices obtained therefor in the spring are higher than can be obtained in fall or late summer, for summer-fed cattle.

The question of the relative cheapness of winter feeding and of summer feeding is one of considerable interest to stockmen in the beef pro-

ducing States east of the Missouri River, as the close competition of their rivals in the dry and warm west and southwest makes necessary the adoption of the best plans for securing profits from the operation of fattening cattle. Many think that winter is the best time for feeding; but others claim that it is possible to show that fattening cattle in winter is unnatural and unprofitable. The price paid in spring for store animals, or "stockers," as the thin animals selected for fattening are called, are usually somewhat higher than the price for cattle of like condition in the fall. This difference does not exceed, usually, one-half cent per pound. In an estimate made by a practical stockman, who has been very successful in feeding cattle in the central part of Illinois, it is assumed that 100 three-year-old store steers, of fair average quality, and weighing 1,000 pounds each, would cost in the spring 4 cents per pound delivered on a farm, which may be worth $25 per acre. Estimating that 3 acres of grass will suffice to keep the steer in thriving condition for six months in the year, the interest upon the value of 3 acres of land would be $5.25; and that upon the cost of the bullock for six months required for fattening him would be $1.40, making $6.65 per head. Under a rather liberal system of feeding each steer will require 45 bushels of corn in six months, which at the average value placed upon the corn crop of this State last year would amount to $13.50, or $1,350 for 100 cattle. That would be enough to mature stock weighing 1,000 pounds when put upon pasture and full rations of grain, with little outlay of labor. Briefly stated, the account with 100 steers would be as below:

Cost of 100 cattle, averaging 1,000 pounds, at 4 cents per pound	$4,000
Interest on above, at 7 per cent. per annum (six months)	140
Interest on value of 300 acres, at $25 per acre	525
Cost of 4,500 bushels of corn, at 30 cents per bushel	1,350
Total cost of cattle and feeding	6,015

Experience has shown that, under management such as has been described above, steers of fair breeding and condition will make an average growth of 100 pounds per month in April, May, and June, and of 90 pounds per month in July, August, and September. Thus, in the six months mentioned, there would be a total gain of 570 pounds per bullock. The steers should then average 1,570 pounds in weight, and be worth at least 4½ cents per pound gross, on the farm, at $69.65 per head. Deducting the cost, $60.15, there would remain $9.50 per head profit. Of course there may be a profit made upon the corn and other food used, and some advantage in enriching the land at the cost of time that might not be so usefully employed in other directions. Cattle averaging 1,570 pounds and solidly matured have usually sold near Chicago for more than 4½ cents per pound.

The estimates given above have been indorsed by many farmers who have succeeded in beef growing, and the correctness of the calculations has been denied by others. If the figures therein given are right the average cost of fattening in such cases would be about 3.53 cents per pound of the increase in weight.

In winter feeding store stock will use about 500 pounds of hay per month. The average value on the farm of the hay crop of Illinois, in 1884, was given as $5.45 per ton. In six months of winter feeding each bullock would eat about 3,000 pounds of hay, worth about $8.17. In the period mentioned the fattening cattle would consume an average of 15 bushels of corn each per month, or 90 bushels in six months. The average value of the corn crop of this State in 1884 was 31 cents, on the

farm where grown. At that price, 90 bushels would be worth $27.90. But it is the almost unanimous declaration of practical farmers that half a bushel of corn per day, in winter, with liberal rations of good hay, will scarcely make more than an average of 50 pounds per month increase in weight of the cattle to which those rations may be fed. If the stores, or "feeders," as they are commonly called, were bought in autumn, at an average of $3.50 per 100 pounds, or about $35 per head, the transaction would be about as shown below:

100 cattle, averaging 1,000 pounds, at 3½ cents	$3,500 00
9,000 bushels of corn, at 30 cents per bushel	2,700 00
150 tons of hay, at $5.45 per ton	817 50
Interest on cost of cattle, 6 months, at 7 per cent. per annum	122 50
Total cost of 1,000 cattle and feeding	7,140 00

In the above no account has been made of the cost of maintenance of men, teams, wagons, and other things needed for the work of caring for the stock, because it is the opinion of the majority of owners of cattle that the manure made will be worth enough to pay for those items, especially since that work will be done at a time when men and teams would have but little other profitable employment on the farm. Not a few farmers think the work of feeding cattle is a benefit to men and horses, by affording needed exercise. If it be assumed that 75 pounds per head per month be added to the weight of the bullock bought in November and fed six months, it would follow that the average increase would be 450 pounds. The total weight of 1,000 steers thus fed would become 145,000 pounds, which at 5 cents per pound would give $7,250, leaving a profit of $110, or only $1.10 per head, to compare with a profit of $9.50 per head gained by feeding in summer. It is quite possible that housing the stock in comfortable barns during the cold weather would cause the gain in weight to be much greater than that indicated above; but in that event interest upon the investment in buildings, and pay for the increased labor in feeding and other duties attending the care of the stock should be taken into the account. From the preceding statements it appears that if the average profit resulting from fattening cattle had been that which is made by feeding in winter in this State, the total gain thus made by the cattle owners of Illinois upon beeves sold by them in the year 1884 would have been $503,675. If that profit had averaged as much as might have been made by skillful feeding during the summer months the total profit would have been more than $4,000,000.

It appears from the accounts received from a large number of farmers, writing from every county in Illinois, and gained from conversation with many others, some of whom have for years given the subject careful attention, that the general average cost of fattening beeves in winter is not far from $36.40 per head. The estimate given above, embodying the experience of these farmers, shows that the cost of beef thus made in winter is 8.09 cents per pound. If it should become necessary to sell the ripened animal for the price per pound paid for the thin "feeder," an actual loss of money would result from the operation of fattening; but the value of the 1,000 pounds which each feeder was, in the above estimate, assumed to weigh, would be advanced from $35 to fully $50 when matured. This would give a gain of $15 per head, which, deducted from the cost of fattening the animal, will leave $21.40 as the cost of the 450 pounds of beef added to the weight of each "feeder," or store bullock, or $4.75 per 100 pounds, leaving 25 cents per 100 pounds, or $1.13 per head profit when the selling price is 5 cents per pound gross.

Of the cost of producing steers of two years or three years old less is definitely known. The average value of the cattle of Illinois was, in the year 1884, given by the Illinois State Board of Agriculture as having been $16.88. If those figures represent the average cash value of the bearing cows in the State, the cost of the calves when eight months old would have been about $8.45. The following estimate of the cost has been based upon the experience and the opinions of men who have had large experience in cattle raising in this State:

Interest on value of cow, eight months, at 7 per cent	$0 79
Interest on value of three acres pasture, at 7 per cent	5 25
Cost of service	1 00
Cost of keeping cow one barren year in each five years	1 41
Total cost of calf when weaned	8 45

No account is made of the cost of keeping the cow during the four months when she is not suckling her calf, as in many cases enough milk is used to pay a considerable part of that cost. There can be no doubt, however, that considered exclusively in the relation to the production of beef, the entire cost of keeping the cows should be charged against the calf. This would add to the above estimate the value of the hay or other forage required for four months, say 3,000 pounds, valued at $8.17, and interest on value of cow for four months, 40 cents. These items would increase the cost of the calf to $17.02, when it would have reached the age of one year.

As a rule the young cattle intended for beef are "roughed" through the second year, and, where they are kept so long before fattening, through the third year of their lives. During that period their chief diet in winter is of cornstalks or other cheap forage. Considerable effort has been given to the attempt to gather data that would warrant a statement of the exact average cost, in Illinois, of producing cattle of fair quality, from eighteen months to three years old, and in such condition as would make them suitable for full feeding; but comparatively little careful thought of that cost seems to have been given by stock-owners generally, and data have not been obtained that would make a trustworthy statement possible.

MARKETS.

Early in the history of Illinois, beeves grown in this State were usually gathered into herds by drovers, who made it their business to drive such stock to the then great live-stock markets of the country. Cincinnati and Buffalo were then the points where the greater part of the surplus supply of live stock from the West was collected, but occasionally drovers from Illinois, Indiana, Ohio, and a few other States west of the Alleghanies drove their stock through to Philadelphia or to New York, as shippers of cattle sometimes, although rarely, now send cattle by railroad from one market, where prices are unsatisfactory, to another nearer the seaboard, in the hope of obtaining higher prices. The cities named bore about the same relation to the live-stock traffic of that day as is now borne by Chicago, Saint Louis, or Kansas City to the live-stock trade of the present time. In the cities which were then the great collecting points for the business, slaughterers bought the beeves offered, and either salted the flesh in casks or barrels, or sold it to supply the demand for immediate local consumption. Other dealers bought the offerings and drove to markets nearer to the sea-coast.

For general-purpose cows, for bulls for breeding purposes, and for working oxen there was, at a comparatively early date, a ready demand from the newer States west of the Mississippi and from Wisconsin. Even to this day there are traces left of that traffic, many animals being each year taken from Illinois to other States and Territories, chiefly for breeding purposes. This demand has, during recent years, come more largely from the States and Territories beyond the Missouri River than from the country lying east of that stream. A very large part of the yearly product of the purely-bred herds of Illinois and of others of the Middle States has been absorbed by the work of improving the cattle of the great plains beyond the Missouri, and during the last five years quite a large number of cattle not purely bred have been bought in Illinois, Wisconsin, Indiana, Michigan, and other Middle States, and taken to the plains. Of these the steers were put upon the ranges, to grow to a size, weight, and condition fitting them for immediate slaughter for beef, or for full feeding upon the corn grown in Iowa, Illinois, or other States. The heifers taken to the plains have been kept for breeding purposes, and probably will be so kept as long as they can in that way be made profitable. It will be seen that the plains thus become, to some extent, practically pastures for the farms of the Middle States, and that the farmers of those States may in effect send their young cattle to the ranges, where they can be kept at small cost, for a year or two, and receive the same cattle when of the right age, and fatten them upon the farms where they were born. The total cost of producing beef is thus considerably reduced.

Some of the surplus supply of cattle in Illinois is sent to Cincinnati; a few go to Indianapolis, Ind.; some are consigned to Pittsburgh, Pa., and others are shipped through to Buffalo, to New York, or to other Atlantic ports. From the southern half of the State many cattle go to East Saint Louis, on the east bank of the Mississippi River, and opposite the city of Saint Louis, Mo. In April, 1869, a charter was granted by the State of Illinois to the East Saint Louis Stock-Yard Company. This company was authorized to issue stock to an amount which was not to exceed $200,000. The original charter of the company which now operates the National Stock-Yards fixed the capital stock thereof at $1,000,000, which was subsequently increased, by vote of the stockholders, by $250,000, to meet the increased requirements of the rapidly growing business.

When completed the National Stock-Yards were more convenient and comfortable than were any others of their kind in the country. Each pen for cattle was in part covered by a roof under which stock could find shelter from the heat of the sun, and from rain or snow. The yards were paved, and scale-houses, and other buildings were well constructed, convenient, and comfortable. The yards as a whole are not surpassed by any in the West in the essential feature mentioned. All railroads entering Saint Louis have easy access to the National Stock-Yards, and bring them large numbers of cattle from Texas and from other States and Territories west and south of that point, while considerable consignments are received there from Iowa, Nebraska, and other parts of the Northwest. The growth of the cattle traffic of the National Stock-Yards year by year is shown by the accompanying statement, compiled from accurately kept official accounts.

By far the greater part of the surplus supply of cattle produced in Illinois and adjoining States on the west and north is sent to the market at Chicago. The Union Stock-Yards there are much larger in the area occupied, and use more pens, sheds, buildings, miles of railroad tracks,

and other conveniences and appliances, than are occupied and used by any other live-stock market in existence. The three great western live-stock markets of the Middle and Western States are Kansas City, Mo., East Saint Louis, Ill., and Chicago. Their relative standing as regards each other are shown by the accompanying statement, in which is given the volume of the cattle business of each, year by year:

Receipts, shipments, and consumption of cattle at Kansas City, Saint Louis, and Chicago, during the twenty years ended with the year 1884, *and the ten months ended with October* 31, 1885.

Years.	Kansas City.			Saint Louis.			Chicago.		
	Receipts.	Shipments.	Used.	Receipts.	Shipments.	Used.	Receipts.	Shipments.	Used.
1865	.....	.....	.....	94, 307	46, 712	47, 595	333, 362	301, 637	31, 725
1866	.....	.....	.....	103, 259	24, 462	78, 797	393, 007	263, 693	129, 314
1867	.....	.....	.....	74, 146	26, 799	47, 347	329, 188	203, 580	125, 608
1868	.....	.....	.....	115, 352	37, 277	78, 075	324, 524	215, 987	108, 537
1869	.....	.....	.....	124, 565	59, 867	64, 698	403, 102	294, 717	108, 385
1870	.....	.....	.....	201, 422	129, 748	71, 674	532, 964	391, 709	141, 255
1871	120, 827	100, 383	20, 313	199, 527	130, 318	69, 209	543, 050	401, 927	141, 123
1872	236, 802	206, 467	30, 332	263, 404	164, 870	98, 534	684, 075	500, 025	174, 050
1873	227, 689	182, 245	45, 421	269, 678	180, 662	89, 016	761, 428	574, 181	187, 247
1874	207, 080	166, 519	40, 550	360, 925	226. 678	134, 247	843, 966	622, 929	221, 037
1875	174, 754	126, 262	47, 949	335, 742	216, 701	119, 041	920, 843	696, 534	224, 309
1876	183, 378	120, 346	62, 916	349, 043	220, 430	128, 613	1, 096, 745	797, 724	299, 021
1877	215, 678	126, 570	89, 201	411, 969	251, 566	160, 403	1, 033, 151	703, 402	329, 749
1878	175, 344	131, 761	43, 788	406, 325	261, 666	144, 659	1, 083, 068	699, 108	383, 960
1879	201, 415	155, 831	55, 530	420, 653	225, 000	195, 653	1, 215, 732	726, 903	488, 829
1880	244, 709	199, 421	49, 860	424, 720	228, 879	195, 841	1, 382, 477	886, 614	495, 863
1881	285, 863	223, 989	62, 145	503, 862	293, 092	210, 770	1, 498, 550	972, 177	559, 838
1882	439, 671	359, 012	80, 509	443, 169	188, 486	253, 683	1, 582, 530	931, 328	661, 521
1883	460, 780	387, 598	73, 000	405, 090	249. 523	155, 567	1, 878, 944	979, 429	929, 738
1884	533, 526	442, 535	90, 991	450, 717	315, 433	135, 284	1, 870, 050	822, 973	1, 047, 077
1885	420, 406	334, 709	83, 103	340, 952	210, 714	130, 238	1, 636, 959	665, 853	917, 097
Total.	4, 138, 012	3, 186, 041	875, 806	6, 298, 827	3, 688, 783	2, 608, 944	19, 295, 353	12, 576, 386	7, 720, 467

It is proper to state here that the live-stock trade of the National Stock-Yards in East Saint Louis is really identical with that of Saint Louis, Mo., since it has been created largely by the energies of the citizens of the last-named place. Cattle coming from the West go either to the Union Stock-Yards, on the west side of the Mississippi, or to the National Yards on the east side of that river. Many of the cattle received in Saint Louis are sent, for convenience of shipment, to the yards in East Saint Louis. In view of the above facts all cattle received or shipped at the stock-yards mentioned have been included in the column for Saint Louis, given in the table above.

In the year 1881, the trade in calves had reached so large proportions that separate account was kept of the numbers received, shipped, or driven out for local uses. In the year 1881 there were received 48,948 calves, of which 33,465 were shipped; in 1882, receipts were 24,965, and shipments 10,229; in 1883, there were received 30,223 calves, and 12,671 were shipped; in 1884, receipts of calves amounted to 52,353, and shipments to 31,089. Many if not most of those calves were taken to the pastures of Illinois and other Western States, Missouri and Iowa absorbing the greater part of the supply not retained in Illinois.

To those not familiar with the business carried on in the great live-stock markets, the routine of life in the Chicago Union Stock-Yards presents many curious and instructive details. For guarding the im-

mense volume of movable wealth often gathered in the pens, and for the purpose of delivering stock to persons properly authorized to receive it, the stock-yard company employes about fifty gatemen. These men take from the gatekeeper's lodge at 7 o'clock a. m., each day, keys which unlock the several gates in the different divisions to which the men are assigned. At 4 o'clock p. m. the keys are returned to the lodge at the main entrance. The locks in no two divisions of the yards are alike; they are of a peculiar construction, resembling none other in common use.

During the night fifty-five special policemen, employed by the stock-yard company, guard and watch the yards. They are expected to assist in unloading, yarding, watering, and feeding stock which arrives between the closing of the yards in the evening and the coming of the gatemen in the morning. In the work of feeding stock some 45 men, 50 horses, and 22 wagons are employed. In addition to the employés above mentioned ten policemen are employed by the stock-yards company, to attend to such duties as usually rest upon policemen. The police system of the company is so complete, and so thoroughly and effectively carried out, that few if any animals have been stolen from the yards during recent years. The employés of the stock-yards company carefully count all stock upon its arrival. If the number of animals is less than the number noted in the way-bill of the railroad company from which the consignment comes, the shortage is promptly reported, and the consignor looks to the railroad company for payment for the missing animals. Should an animal be lost or stolen from the custody of the stock-yards company prompt payment therefor is made by the company.

When these yards were first opened to the public only four commission merchants were there to attend to the business of selling and of buying for drovers or shippers. Now there are some ninety firms regularly engaged in that business. These firms employ some four hundred men to attend to yarding, feeding, selling, and weighing stock, and to such other work as belongs to the several departments of the live-stock commission business. As a rule the salesmen are quick and accurate judges of the value of the different classes of live-stock, surpassing in this respect the most experienced farmers and stock-growers. Most of the salesmen have learned the details of their business by years of study and experience in the subordinate positions of "yarder," or "helper," as those are called who attend to the driving of stock to and from the pens or the scale-houses, and to other work about the yards. These assistants are required to reach the yards at about 3.30 a. m. to attend to such stock as may arrive early in the morning. They are also expected to solicit for their employers the privilege of selling such stock as may arrive without having been consigned to any house or firm in the yards. In some cases the firms divide with the solicitor commissions received for selling consignments thus obtained, thus stimulating the employé to renewed efforts. These helpers assist in driving to the pens allotted to them the stock received, and to feeding the cattle, unless it is the wish of the owner that the stock should not be fed until a later hour. They also obtain a copy of the way-bill, giving name of the owner of the stock and the number of animals received, to which they add the number of the pen in which the stock is placed; they attend to all animals injured in transit, and make a full report of all these particulars at the offices of the firms employing them. They are then at liberty for a time, but must be at hand when the business of selling begins, at 9 o'clock in the morning. The salaries of these helpers range from $50 to $75 per month.

On arriving at the office in the morning the salesman scans the books showing the number and kind of consignments received by the firm, acquaints himself with the tone of the market as far as that can be done, and then inspects the stock he has to sell, that he may determine approximately its value. He then looks for buyers. The latter are almost sure to soon come riding through the alleys, looking over the high fences at the cattle. With the fixing of a price at which the buyer is to take the stock the duties of the salesman cease. They are seldom pleasant, as there is a constant and keen struggle between buyers and sellers for the advantage in bargaining, and between rival salesmen to surpass each other in obtaining "the top of the market." The personal discomforts attending the business of buying and of selling stock in the yards are great. But comparatively little rainfall is necessary to make the yards muddy, and a few hours of sunlight and wind serve to dry the mud, which the trampling of thousands of hoofs quickly reduces to powder whirled through the air by every passing breeze, to fill eyes, hair, beard, and lungs. When not covered by snow the yards are always either muddy or dusty.

It has been the custom to keep cattle in the pens, even after they have been sold, until they have eaten all the hay and drank all the water they will take. The object of the seller was to induce the animals to drink large quantities of water, as the latter cost nothing and increased the weight of the stock. The theory was that the buyer paid for the water the price he had agreed to give for beef. This was much more generally the custom a few years ago than it is now, and was the cause of much severe suffering among cattle, since to induce them to drink deeply on arrival at the market where they were to be sold, they were deprived of all water for many hours previous to arrival. In some instances cattle in transit have been furnished with liberal quantities of salt, that intense thirst might be thus created. On arrival at the market where they were to be sold, the cattle were fed dry hay, which served to increase their already great thirst. When they had eaten all the hay they could consume, water was admitted to the troughs of the pens, and the suffering brutes were permitted to gorge themselves. The agonies induced by this plan were beyond description. The persistent efforts of the Humane Society of Illinois resulted in a measure of reform in this matter.

The scale-houses and scales are so arranged that about 40 cattle, averaging 1,500 pounds each, to 60 or 65 of 900 pounds average weight, may be measured at a single "draft." The platform or floor of each scale forms the floor of a pen that is closed at each end by a gate. As the stock enters one of these gates, the other being closed, they are counted. As they file out when the gate is closed after the weighing they are again counted. The number of animals and their gross weight are recorded in a book kept by the stock-yards company in each scale-house for that purpose. This record shows the letter used for designating the division of the yards, and the number of the block and of the pen whence the stock have come, together with the names of the sellers and the buyers. All of the above data are then copied on a small blank called a scale-ticket or scales-ticket. On the back of that ticket the salesman usually notes the price at which the stock mentioned on the face thereof was sold, and the ticket is then sent to the office of the seller.

Some years ago it was the custom here to collect payment for each lot of stock by check or otherwise, but as the business grew rapidly and greatly that plan was found to be too slow and cumbersome. Now the method usually followed is to copy upon a blank called a duplicate

the names of seller and of buyer, the number of cattle, hogs, or sheep sold, the weight and price. These duplicates are presented to the agent of the buyer, who, if it is correct, indorses each. The duplicate is then presented to a clerk in the accounting department of the stock-yards company, and is by him stamped. It next goes to the Union Stock-Yards National Bank, or to the Drovers' National Bank near by. The sum shown by the duplicate as due to the seller is entered to his credit, and charged against the account of the buyer. In the few instances in which the buyer has no account with either of the banks named the collection is made in some other way.

Besides the firms which carry on a regular commission business here there are in the Chicago Union Stock-Yard some hundreds of men who buy and sell, upon their own account, such stock as promises to pay a profit. As a rule such dealers have begun their business here by purchasing small lots of inferior stock, the "odds and ends of the market." There are among these "scalpers," as such traders are called, not a few who have accumulated considerable fortunes in the business. At times their operations reach proportions of no small extent. They have frequently bought so freely as to relieve the market of a heavy over supply.

A very large part of the stock shipping business of the West is done by the aid of capital owned by others than the shippers. The latter frequently buy stock upon condition that it is to be paid for upon delivery at the railroad station whence it is to be shipped, or make payment by giving checks on local banks. As soon as the stock can be shipped draft is made upon the consignee in Chicago for a sum nearly or quite equal to the purchase price of the consignment. The draft is deposited in the local bank to meet the checks given to the former owners of the stock. Thus a small amount of capital is sufficient to carry on a considerable business in this way. One effect of the result of this method of doing business is the forcing upon the market each day all of the stock that may arrive on that day, as far as it may be possible. Knowing that the draft made by the shipper must be paid within a few hours, and unwilling to allow his own capital to lie invested in stock awaiting a favorable turn in the market, the broker is in a measure compelled to force the consignment off, even though he may feel that higher prices might be obtained by waiting a day. Usually nearly all the receipts of any day can be sold during that day, but there are occasions when this becomes impossible, because of the immense number of cattle or of hogs received. The system of drawing upon the consignee thus becomes to some extent disastrous to the shipper at times, by compelling the agent to force stock upon a market already staggering under an over supply. The greater the glut the more necessary do heavy concessions to buyers become. At such times the "scalpers" prove to be very valuable aids to the brokers, by purchasing largely of stock that might otherwise be for a time actually unsalable without making exceedingly heavy sacrifices.

There are probably fully five hundred men directly engaged in the business of buying and selling stock upon commission in the Chicago Union Stock-Yards. The regular charge for selling cattle is 50 cents per head, except for calves, yearlings, and store cattle, for selling which the commission is $10 per car-load. If it be estimated that a uniform charge of 50 cents per head were collected for all the cattle received at Chicago in 1885, the total commission would have been $908,848.50. That sum divided equally between all the five hundred men engaged in the work would afford for each the sum of $1,818 per year, or $5.86 per

day for 310 days of the year. Several times attempts were made to unite the brokers at the Chicago Union Stock-Yards in an organization for the promotion of their interests, and for the better control of the business. All of these efforts failed until the year 1884, when the Chicago Live-Stock Exchange was formed. The present officers are, Elmer Washburn (banker), president; W. H. Thompson, jr. (a buyer of cattle), vice-president; Levi B. Doud (also a buyer of cattle and a packer of hogs), treasurer; and Charles W. Baker (broker), secretary. Of the directors seven are brokers and two are buyers and packers.

The rules of the above-named body provide for the levying of assessments, pro rata, upon the members for such purposes as shall be deemed legitimate and proper; for the suspension or the expulsion of members who may violate any of the rules, as by refusing to give evidence when required by the board of directors or by the committee on the arbitration, or of appeals, to do so; for violation of contract or of honorable business usages; for selling stock for less than the rates fixed by the Live-Stock Exchange; for neglect to pay assessments within thirty days after such assessments shall have been levied, or for dealing in diseased or in condemned stock or meats.

The rates fixed by the exchange for selling stock are $6 per single-deck car-load of hogs and sheep, and $10 for each double-deck car-load. For cattle, except for calves, yearling and stock cattle, 50 cents per head is charged. Six dollars per car-load for cars containing live stock of different species, is the rate fixed, except when such cars contain a number of cattle which, at 50 cents per head, would make the commission on the entire load exceed $6, in which event the commission shall not be less than 50 cents per head for each head of cattle contained in the car. Any member of the exchange who shall sell stock for less than the rate of commission specified above is to be fined $100 for each offense, one-half of the fine to go to the person furnishing proof of the violation of the rule, and the other half to go to the Association. The granting of rebates, or dividing of commissions with any consignor, except commission merchants, is deemed a violation of the rules.

Rule XVII will have for the general public greater interest than others adopted by the Live-Stock Exchange, since it is designed to protect the public from the danger of eating the flesh of diseased animals. This rule is as follows:

SEC. 1. The board of directors shall appoint five members of the association as a committee on inspection, who shall have and exercise a general control over the inspection of all live stock and provisions offered for sale by, through, or to any member of the association, and shall act as referees in case of any complaint against or dissatisfaction with the chief inspectors, or any matter of difference pertaining to the same.

SEC. 2. The committtee on inspection shall, subject to the approval of the directors, appoint a chief inspector and such assistants as the business may from time to time require, with such compensation as the directors may determine; and the directors may, if deemed by them expedient, require of the said chief inspector or of any assistant in such sums as they may deem prudent a bond for the faithful discharge of his duties.

SEC. 3. It shall be the duty of such chief inspector, either by himself or by his assistants, to carefully inspect all live stock received at the Union Stock-Yards with special reference to disease or injuries. All stock for such reason condemned by the inspector or his assistants as unsound or unfit for use shall be set aside and be kept separate from that in good condition, and dealt with in such manner as the laws of the State require.

SEC. 4. Any member of this association who shall be found dealing in such condemned live stock or meats, either for himself or upon commission, shall for the first offense (upon conviction thereof) be suspended for such time as the directors of this association may determine, and if again found guilty shall be expelled from this association.

SEC. 5. The object of this rule is to provide for and maintain a rigid examination into the sanitary condition of all live stock handled by members of this association, thereby preventing the dealing in or use of diseased or unwholesome meats, and so far as possible protect the interests of the public in that respect.

Rule XVIII provides that each member of the exchange shall be held responsible for the acts of his partner or partners, and for those of his employés, for any violation of the rules, regulations, or by-laws of that association.

In its efforts to keep the meat supply of Chicago pure and wholesome the Live-Stock Exchange has the co-operation of those who buy cattle for slaughter for canning or for shipment, in the carcass or otherwise, to other markets. If no higher motive actuated them self-interest would demand that those who preserve beef for sale in other markets should use every precaution to prevent the existence of even a suspicion that the meats they use are unwholesome. Prejudice against canned beef has been strong in many markets, particularly in the markets of Europe, where the jealousy of the local dealers led them to use all possible means to resist the encroachments of American meats upon their trade. One means commonly used was the circulation of statements to the effect that beef shipped in the carcass or preserved, in cans or otherwise, for shipment from America was taken from inferior cattle, and even from crippled or diseased animals. It cannot well be denied that there were, a few years ago, circumstances connected with the live-stock trade of Chicago which made it impossible to convince the public that the flesh of such diseased or crippled animals did not regularly form part of the meat supply of this city. It was a well-known fact that a certain class of dealers purposely chose stock of that description, because it could be bought for a small price, and boldly sent the flesh to the wholesale markets. So notorious did this fact become that the beef canners and those who shipped dressed beef to other markets combined in an effort to stop the whole nefarious business, that suspicion as to the wholesomeness of their own products might be prevented. Under a system that permitted the indiscriminate slaughter of diseased animals it was, of course, not impossible for canners of beef to use unwholesome flesh, but it would have been very unwise to do so, for the purchase by them of diseased stock would have almost certainly been detected and reported by persons who frequented the market.

Canners of beef have been active in their support of measures intended to suppress all traffic in stock or in meats unfit for use for food for human beings. The Chicago health department, the canners, the shippers of dressed beef, and the Chicago Live-Stock Exchange have, by their combined efforts, so nearly succeeded in suppressing all dealing in objectionable stock in Chicago that the meat supply used in or shipped from this city is doubtless as free from unwholesome beef as is that of any market. Private interests have come forward to do what the Governments of other countries seek to accomplish by the enactment of laws prepared expressly for the purpose of protecting consumers of meats. The knowledge that diseased cattle will be promptly condemned and sent to the tanks, to be converted into fertilizing material and grease, has done much to deter people from sending such stock to market. Although increased vigilance has been exercised by the inspectors for the Chicago health department, the number of cattle condemned by them thus far this year equals only 38 per cent. of the number sent to the rendering tanks in 1884; the number of calves thus disposed of was 33⅓ per cent. of the number tanked last year; and the number of sheep this year was 68 per cent. of the total number thus used in 1884. Of hogs, how-

ever, a far larger number have been condemned this than were so treated last year, the ravages of swine plague having been very heavy in the West last summer.

The books of the Chicago Department of Health show that thus far this year condemnations of live stock and of meats at the stock-yards and within the city limits have been as follows as compared with those of last year:

	1884.	1885.
Cattle, diseased	816	310
Calves, "slunk"	51	17
Sheep, diseased or emaciated	463	315
Swine, diseased	1,978	2,263
Meats condemned (pounds)	561,465	50,989

The last mentioned item in the above, as stated by Mr. Merkl, of the department of health, was made up of the following details: Beef carcasses, 4; beef quarters, 247; calves, 66; sheep, 247; hogs, 66; fresh beef, 207 pounds; corned beef, 279 pounds; shoulders, 669 pounds; hams, 1,226 pounds. In consideration of the immensity of the supply of live stock and live-stock products handled in this city in the course of the year, the above quantities seem to be exceedingly small.

The act defining the powers of the Chicago Department of Health is as follows:

SEC. 1. It shall be unlawful for any person or persons, company, or corporation, within the city of Chicago, or within 1 mile of the limits thereof, to engage in the business of slaughtering animals for food, packing them for market, or rendering the offal, bones, or scraps from such animals, or any dead carcass, or any animal matter whatever, or to engage in the manufacture or production of fertilizers or glue, or the cleaning or rendering of intestines, unless he or they shall have obtained a license for such business. The mayor is hereby authorized to issue a license for such purpose, to any person or persons applying to him in writing for the same. Such application shall specify the place and location, and the character of the business for which license is desired, and the applicant shall pay into the treasury as a license fee, the sum of $100 per annum.

SEC. 2. Any license so granted may be revoked upon written notice by the mayor, whenever it shall appear to his satisfaction that the party so licensed shall have violated any provision of any ordinance of the common council, or any statute law of the State of Illinois, relating to said business of slaughter, packing, rendering, and manufacture of fertilizers or glue.

SEC. 3. The commissioner of health, or any or all of his sanitary officers, shall be permitted free entrance at all hours of the day or night, to all buildings used for the purpose specified in section 1 of this ordinance, and to free and unrestrained examination of all apparatus or utensils used in such manufacture, or in the disposition of gases generated in such manufacture.

SEC. 4. Any person who shall violate any provision of any section of this ordinance shall be guilty of a misdemeanor, and upon conviction thereof, shall be fined in a sum no less than $25, nor more than $100, and $100 a day for each and every day he shall continue to carry on said business without license; and upon a second, or any subsequent conviction for the like offense, he shall in addition to the same fine imposed for the first offense, be imprisoned in the house of correction for a period of not less than thirty days, nor more than ninety days, and the mayor shall revoke his or their license immediately on being notified of such conviction.

This ordinance took effect immediately after its passage, August 27, 1877.

DAIRYING.

A considerable part of the income derived from cattle in Illinois has for years come from the sale of milk, butter, and cheese. The opening of lines of railway affording direct and comparatively cheap transporta-

tion to the markets of the East did much to quicken the growth of the dairying business in this State; but the growth of the large towns within the State, and the adoption of new and improved methods of making and handling dairy products, have doubtless done nearly or quite as much as was done by the railroads to develop this great industry. The cities have made very heavy demands upon the country near them for fresh milk and cream for daily use, as well as for butter and for cheese, yet the number of milch cows per thousand inhabitants in the State has not increased but has diminished, as is shown elsewhere in this report. During the last five years the increase in the total number of cows kept in Illinois, as shown by the returns made by the assessors, has been only 24,325. There can be no doubt that the increase of population in the State since the taking of the last census of the United States has been much greater than the growth in the supply of milch cows in Illinois.

The quantity of milk produced, of butter marketed, and of cream and cheese sold from Illinois farms and factories during each of the last five years, together with the average value of those products per year and per cow, and the total value of those products year by year, as reported by the assessors, are shown in the table which follows. To represent truly the quantity and value of the products of the cows of this State, there should be added to the table the quantities of milk, cream, butter, and cheese used on the farms. This it is manifestly impossible to accomplish accurately without the aid of the expensive machinery used in obtaining the data for a complete census.

Year.	Cows kept.	Milk.	Cream.	Butter.	Cheese.	Total value.	Average per cow.
		Gallons.	*Gallons.*	*Pounds.*	*Pounds.*		
1880	613,738	38,986,861	601,314	24,553,449	6,187,680	$9,588,541	$15 62
1881	625,410	40,153,488	1,380,939	21,578,414	5,837,974	11,005,203	17 59
1882	716,102	41,433,620	2,188,396	21,658,054	5,252,036	15,793,577	22 05
1883	716,102	43,006,273	2,324,579	22,198,370	4,931,826	13,462,244	18 80
1884	638,063	50,056,318	1,479,183	22,696,333	4,795,697	12,621,419	19 78
Averages...	661,883	42,727,312	1,594,882	22,576,924	5,401,843	12,494,197	18 88

The constant decrease shown above in the quantity of cheese sold, and the corresponding increase in the annual production of milk might be perhaps fairly indicative of a steady decline of the cheese-making business of this State, were it not for the circumstance that the figures given to the assessors are widely different from those obtained by the canvassers for the United States Census for 1880, in which census report the State of Illinois was credited with the production of 21,253,194 pounds of cheese, of which 1,035,069 pounds were made on farms, 4,977,286 pounds in cheese factories, and 15,240,839 pounds in butter and "skim-cheese" factories. The course of the cheese and butter making business in Illinois since 1850 is shown by the following figures:

CHEESE.

Years.	Farm.			Factory.			Total.		
	Pounds.	Population.	Per cow.	Pounds.	Population.	Per cow.	Pounds.	Population.	Per cow.
1880	1,035,069	0.3	1.2	20,218,125	1.6	23.4	21,253,194	6.6	24.5
1870	1,661,703	0.6	2.6	4,072,301	1.6	6.4	5,734,004	2.3	9.0
1860	1,848,557	1.1	3.5	.....	.....	.....	.....	.....	.....
1850	1,278,225	1.5	4.3	.....	.....	.....	.....	.....	.....

BUTTER.

Years.	Farm.			Factory.			Total.		
	Pounds.	Population.	Per cow.	Pounds.	Population.	Per cow.	Pounds.	Population.	Per cow.
1884	40,982,905	.....	64.2	2,361,943	.....	3.7	43,344,848	.....	67.9
1880	53,657,943	17.4	62.0	2,414,668	0.8	2.7	*69,208,972	19.6	64.7
1870	36,083,405	14.2	56.4	4,348	0.1	0.1	36,087,753	14.3	56.5
1860	28,052,551	16.4	53.7	.....	.....	.....	28,052,551	16.4	53.7
1850	15,526,543	14.7	42.5	.....	.....	.....	15,526,543	14.7	42.5

*In the total for 1880 were included 4,136,361 pounds of butter made in "skim-cheese" factories, equal to 1.4 pounds per capita of population, and to 4.8 per cow. It appears from the above figures that the average annual product of butter per cow, in Illinois, had risen from 42½ pounds, in 1850, to 64.7 pounds in 1880; but the increase of the butter supply per capita of population during that period was only 4.9 pounds. Of the increase per cow, 19.5 pounds were gained on farms and 2.7 pounds in factories, a fact which will be as unexpected by some as it is creditable to the housewives who make butter on Illinois farms, and to those who have bred and cared for the cows, since the figures given above show that there has been a marked improvement in the stock and in the method of handling their milk and butter.

The fact that the average value per cow of the annual dairy product sold during the last five years, as reported by the assessors, has been $18.88 is in itself an indication that the cows of this State have paid fairly for their keeping; for it is apparent that if the quantity sold has equaled in value the amount mentioned, and there is abundant reason for thinking that it has more than equaled those figures, the milk, cream, butter, and cheese used on the farms, and of which no account has been made, must have been enough to swell the credit side of the account greatly.

During the last five years the average yearly output of milk by Illinois farms was about 381,171,000 pounds, and of butter 22,576,924 pounds. Of the cost of production of those articles few even of those who are directly engaged in dairying appear to have accurate knowledge. Even in instances where the chief if not the only income is from sale of milk for use in large cities, questions as to the cost of and profit from the production and sale of milk elicited very little definite information. In a general way it is asserted that the milk business pays well, and that dairying is more profitable than are most other farming operations. The president of the Illinois State Dairymens' Association recently stated:

> One thing is certain: milk production will always be more profitable for a term of years than other lines, for this reason: farmers will not milk cows unless it pays better than other farm work, which is less confining.

Much time has been devoted to this study by Professor Henry, of the Wisconsin State Agricultural College, with a view especially of ascertaining what quantities of foods of different kinds were required for the production of one hundred pounds of milk, or a like quantity of butter. The results of some of his investigations are summarized in the subjoined statement, in which are also given the cost of the several parts of each ration, at the wholesale prices thereof in Chicago, at this time. In estimating the value of cornstalks use has been made of the statement made by Professor Henry, to the effect that an acre produced 4,490 pounds of cornstalks. The average value of such fodder has been assumed to be $5 per acre. The mixed hay has been considered worth $8 per ton, the clover $11, corn-meal $33, and the bran $11.50 per ton, respectively.

One hundred pounds of milk.

Kinds.	Fodder.		Meal.		Bran.		Total cost.
	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	
		Cents.		*Cents.*		*Cents.*	*Cents.*
Cornstalks	195	21.7	25	41.2	35	20.1	83.0
Mixed hay	71	28.4	26	42.9	36	20.7	92.0
Clover hay	60	34.5	26	42.9	37	21.3	98.7
Averages	108.7	28.2	25.7	42.3	36	20.7	91.2

One hundred pounds of butter.

Kinds.	Fodder.		Meal.		Bran.		Total cost.
	Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.	
Cornstalks	3,380	$3 76.4	514	$8 48	719	$4 13.4	$16 37.9
Mixed hay	1,348	5 39.2	500	8 25	700	4 02.5	17 66.7
Clover hay	1,179	6 77.9	513	8 48	718	4 13.0	19 38.9
Averages	1,966	5 31.2	509	8 40.4	713	4 09.6	17 81.2

The above prices give, of course, only an approximate idea of the cost of milk and butter. No prices could be used in so condensed a statement, that would truly represent the cost in every part of the State. The table will fairly serve as a suggestion to those who wish to accurately ascertain the cost of the products named. If it be assumed that the averages given above represent nearly the quantities of the several foods given by farmers in the vicinity of the large cities, and the cost of those rations, it will appear that 100 pounds of milk costs 91.2 cents, and that the general average cost of butter produced under such circumstances would be 17.8 cents per pound. Where the milk is sent to factories whey may be brought to the farm and fed, thus returning to the farm some of the elements taken from it in the milk, but where the milk goes to the cities there is not such restoration of fertility to the farm. If butter is made the buttermilk remains, and that is estimated to be worth 20 cents per 100 pounds.

At present milk is selling to dealers in Chicago at the rate of $1.15 per can, each can containing about 70 pounds. This gives $1.64 per cental, and on milk produced at a cost of 91.2 cents per cental would leave nearly 64 cents per hundred to pay for labor, interest, wear, and other outgo. Cows of fair milk-producing capacity should yield 3,000 pounds of milk per year, on which there would be a gross profit of $22.32.

DISEASES.

Before the late war the cattle of Illinois were quite free from fatal diseases. Nothing of an epizootic nature had caused noteworthy losses. The worst maladies from which they suffered were milk sickness, an occasional case of anthrax and of "big jaw," or "lump jaw," with a few cases of the disorders classed by non-scientific people as murrain. The great reduction in the live-stock supply of the North caused by the war created a strong demand for cattle and cattle products. The market for beef showed the effects of the destructive drain upon the live-stock

resources of the country more clearly, perhaps, than did any other branch of that industry. To answer the demand thus created cattle from Arkansas, from the Indian Territory, and from Texas were sent to the North in considerable numbers as early as 1865. Those cattle brought with them the germs of a disease that has caused greater loss to cattle-owners in this State than has been caused by all other contagious or infectious diseases of cattle. Many thousands of dollars' worth of cattle were lost in this State before the people learned to ascribe such losses to their true cause. When it was understood that the introduction of cattle from the remote Southwest had been the immediate cause of a deadly disorder among the native stock of Illinois, the people demanded the adoption of such measures as would prevent the recurrence of such disasters. In consequence of the quite general enlightenment of farmers and others, deaths from Texas fever have been comparatively few in this State during recent years; yet it is safe to say that scarcely a year has passed in the last two decades without recording the loss of some cattle in Illinois from the disease named. The animals thus affected were usually those taken to pasture from stock-yards wherein beeves recently from the Gulf States had been confined. No measures are adopted to prevent susceptible stock from occupying inclosures in which such cattle as are likely to convey the infection have been, nor are any used to protect the grazier who visits the market for the purpose of buying store stock. It is perhaps the belief that the purchaser should look after his own interests in the matter. The assurance is not infrequently given by the sellers that none of the store stock they offer has been exposed to infection, but it is not probable that there is a cattle-pen of importance in any of the larger cattle markets of the country in which Texas cattle were not confined at some time during the summer of the current year, and of almost every other year since those markets first received Texas cattle. Many graziers and feeders having learned these facts refuse to buy store stock from such markets during the periods in which there is danger of infection by splenic fever. The loss caused to the broker by this prudent action of graziers may be considered equal to about 50 cents per head for each steer bought by them outside of the infected markets; but this sum is insignificant compared with the losses that would doubtless result from the purchase of large numbers of store steers in those markets during the warm months. It cannot be denied that the aggregate of commissions for purchase and sales of cattle have been far less than they would have been had not the danger from Texas fever been made widely known by newspapers and otherwise. Agitation of the subject has led graziers to refuse to buy cattle, except when they feel sure that the animals have never been in pens or other inclosures where stock from Texas fever regions have been confined. Instead of seeking stockers in the great markets graziers now buy largely in the country where the animals they want were raised, or they buy in markets remote from lines of transportation over which cattle from the permanently infected regions are usually moved. Iowa, Minnesota, and Wisconsin are visited, and the stock there found is shipped direct to the home of the buyers, avoiding the great markets and dangerous lines of railroad. It will be seen that the stock-yard companies, and the companies managing railroads leading to those yards, lose yard charges and freights because of the existence of Texas fever, and because of the neglect of all precautions intended for preventing the conveyance of the germs of that malady. How great the loss of possible earnings to those corporations and to the salesmen may be there is, of course, no way of learning, but it is

certainly very large. It is to be regretted that instead of seeking to remove all danger by such means as might be adopted, the brokers and railroad and stock-yard companies have seemingly been content to try to suppress all information about outbreaks of diseases of live stock. It is perhaps not surprising that as a rule live-stock brokers dislike all public mention of the subject of contagious diseases of stock, and object to all efforts to teach the public the character and extent of the danger menacing the cattle industry of this country, as any agitation of the subject affects the current of the trade. There has been, however, a marked change of opinion within the last three or four years among the classes mentioned. Not a few of the commission merchants have large sums invested in herds and in ranches in the West, so that their interest in the cattle trade is not limited to the commissions they may earn, as is the interest of many others in the trade. Evidence of a change of opinion among such men has been seen in the rules adopted by the Chicago Live-Stock Exchange, and in the aid offered by the increasing number to the work of suppressing the sale of diseased animals, and of the spread of contagious and infectious diseases. The influence of this change may be seen in the fact that the official records of the health department of Chicago, which has jurisdiction over the stock-yards district of this city, show that the number of cattle afflicted by disease and sent to this market for use as food has been far smaller this year than it was in 1884, or other recent years. There is reason for hoping that continued agitation of this and kindred matters will result in preventing entirely the shipment of diseased animals of any kind to market for use as food for humanity. Due regard for the welfare of the thousands of farmers who would make beef growing an important part of their business, and of the millions of consumers who would be benefited by a larger production of meats, demands that the truth regarding Texas fever and other diseases of live stock shall be made more generally known, and that the facts should be repeated for the benefit of the many who, having no present personal interest in the subject, and therefore giving it no attention, may next year or later become graziers or feeders of cattle.

It may not be amiss to mention here the fact that the efforts of those who have sought to arouse the public to a just sense of dangers menacing the live-stock interests of this country, through the continued existence of fatal, contagious, or infectious diseases, especially of pleuro-pneumonia, have received most valuable aid from the newspapers of Illinois. For a time, in the early stages of the work, a few publications, even among those ostensibly devoted to the live-stock interest, persisted in declaring that the agitation of the subject was begun and maintained by a few men who wished to, by so doing, serve their own personal and selfish ends. Following each new outbreak of disease the veterinary profession was sharply criticised as being responsible for the appearance of the disorder. One or two market reports, issued in the interest of, and dependent for existence almost entirely upon the patronage of live-stock brokers, continue in this unwarrantable course; but very few publications of recognized influence now oppose the movement intended for the suppression of contagious diseases of animals.

Much complaint has been made regarding the publicity given to accounts of outbreaks of pleuro-pneumonia and other maladies among domestic animals. The people have been assured that the prohibition of importations of living cattle from the United States into Great Britain was caused by such publications. It has also been freely charged that veterinarians have been largely the cause of the circulation of damag-

ing accounts in the newspapers, regarding the prevalence of fatal diseases of cattle; it was even asserted recently in a large gathering of stockmen that the Bureau of Animal Industry had been instrumental in securing the wide circulation of sensational articles of the kind described above. A somewhat extended and intimate knowledge of this particular subject warrants me in asserting that the articles relating to disease of live stock, as published by influential papers, have been usually prepared without the assistance, frequently without the knowledge, of any veterinarian. Even a hasty consideration of the articles will suffice to convince the reader that most of them were written with the sole purpose of presenting the truth, as clearly, forcibly, and carefully as was consistent with the speed demanded by work for daily papers. If the truth was not given exactly, the fact should be ascribed to a lack of that scientific knowledge which is necessary to the competent veterinarian, but is not expected of the newspaper writer. One or two instances illustrating this point, and at the same time showing something of a peculiarity of newspaper work, occurred when a large number of cattle were affected by ergotism in the West, in the spring of 1884. Very full and accurate accounts of the extent of the outbreaks, of the appearance of the afflicted animals, of the conditions under which they were kept, and reports of opinions expressed by physicians and others, were given day by day by the Chicago *Tribune*. Not a sentence in these articles gave it as the opinion of the writers that the cattle were suffering from foot-and-mouth disease. The sole aim of the writers was to present a graphic statement of what they saw and heard concerning the outbreak; yet those reports were denounced very bitterly as being sensational and exceedingly mischievous. Yet those veterinarians who hastened to the scene and were the first to announce that the malady was non-contagious and therefore comparatively harmless, were afterwards often denounced as having been responsible for the appearance of the so-called sensational articles, and for the resulting anxiety among cattle-owners, which the veterinarians took the earliest possible opportunity to allay.

At the beginning of the year 1885 a few herds were under quarantine in this State, because of the known or suspected existence among them of contagious pleuro-pneumonia. The outbreak of that plague among highly-bred Jersey cattle in this and in neighboring States resulted in most serious injury to the Jersey cattle as a breed. The damage done directly and indirectly to the cattle interests of this and other States affected personally many people of intelligence, wealth, and influence, but all classes concerned in the cattle business of Illinois were more or less directly affected. The result was that so general and strong a feeling was aroused in this State that there was little opposition in the last general assembly to the passage of a bill for the control of contagious diseases among domestic animals. A copy of this bill, and the proclamation of the governor issued in conformity therewith, will be found elsewhere in this volume.

Anthrax or black-leg, and milk sickness killed a few cattle in Illinois during the last year, as they have done in nearly every one of many years. The cases were scattered over the State, and there were not enough in any one locality to excite especial comment. Accurate accounts of the number of animals thus affected can be obtained only by a careful canvass of each township in the State, and even that would not give entirely trustworthy returns, since the disorders named are known by different names among stock-owners. Whether anthrax is increasing in this State or not is not apparent from the answers returned

by correspondents to inquiries on this point; but the general habit of leaving animals dead of that disease to rot on the surface of the ground is more than likely to increase losses from the disorder. Some careful men bury the stock that die of black-leg—a course that will tend to perpetuate the existence of the germs. Only a few are careful to burn the carcasses of such animals. Of milk sickness there are each year some cases, but the number becomes less year by year, as the land is broken by the plow and relieved of surplus water. Mr. Thomas Rigg, of Wabash County, Illinois, states that some fifty years ago, when there were more undrained swamp land, more impure water and malarial air in this State than there are now, there were more than a hundred cases of milk sickness for each one now seen. Mr. A. M. Sturman, of Dahlgren, writes that some fifty years ago the very dogs and buzzards, the wild turkeys and the hogs had milk sickness from eating the carcasses of dead cattle, and the calves would shake and fall while sucking their dams. Many people died of the disease, induced by eating the beef, or by using the milk or the butter of animals affected. At that time the opinion was held by some that the malady was caused by eating a plant that appeared late in the season; others believed the cause was to be found in the salty earth the cattle obtained at what were known as clay-licks; still others thought that cattle were poisoned by eating grass upon which some mineral, which rose from the ground, had settled; and yet others were convinced that the drinking of water from stagnant pools induced the disease. Mr. Sturman adds:

We have the same marshes that we had fifty years ago; the same ponds and pools of stagnant water; the same clay-licks, and the same wet and dry seasons; but our forests have been cleared up, our lands cultivated, and we have seldom a case of milk sickness. Cattle that were salted regularly never suffered from the disease. The usual remedies were soft corn, copperas, and whisky—the corn and copperas being for the cattle and the whisky for the people.

Writing from Mount Carmel, Mr. M. L. Tilton says:

In regard to milk sickness, we have it in the river bottoms and among the foot-hills, where there is an undergrowth of spice bush, pawpaw, hazel, and elm, with a larger growth of ash, sugar tree, mulberry, and maple. In such places the stock had free access to water in the river. Then we have it on the high, rolling land, entirely away from the bottoms, and having a different growth of timber, such as hickory, black and white oaks, sassafras, and dogwood. In such cases water is obtained from branches and pools of standing water. But the worst place within my knowledge was a field of some 12 or 15 acres of high, rolling land, that was used as a sugar orchard. The rest of the timber had been all cleared away. Through this place was a ravine, in which water ran, I think, all the year. To turn horses, sheep, or cattle into this place was to insure almost certain death to them.

As to the time when stock take this disease, they have it in both spring and fall, but more commonly in the fall, about the time leaves begin to drop from the trees. Stock usually show symptoms of milk sickness soon after a little freezing weather, or after cold rains. Cows giving milk seldom die of it, but their calves show it at once from sucking the milk of the sick cows.

There are many and various theories as to the cause of milk sickness. My own is that the earth contains some mineral or other substance that rises by evaporation and collects on the growing vegetation, which is eaten by the stock. One thing we know certainly—that is that we never have any milk sickness on land that has been plowed and exposed to the freezing of one winter. I do not wish to be understood, from what I have written, that we are having any great trouble from this cause. The fact is that the land once cursed by this disease is mostly in cultivation, and the disease has therefore disappeared from localities where it was once prevalent.

On the same subject Mr. George Strong, of Effingham County, writes:

The early settlers were in the habit of fencing in the spots that gave the "milk sick." After the land was cleared from brush and undergrowth, drained and seeded to tame grasses, the so-called milk sick appears. In time the fences around these infected spots rot and tumble down, or are removed, and the disease that caused their erection is forgotten. Wet, muggy weather after a drought and preceding fall frosts, is the time when stock suffers from milk sickness.

Of other ailments afflicting the cattle of Illinois none seems to threaten greater losses than does abortion. No accurate data as to the extent of the losses from this cause can be obtained without a careful canvass of every township in the State. Owners of cattle seem to have given the subject very little attention, as a rule, from which fact the inference may be drawn that the cases of the kind are too few to be considered of much importance. The inquiry, "Are cases of abortion becoming more frequent than such cases were a few years ago?" has brought out replies that indicate that there has been no general increase great enough to attract attention. In some instances answers were returned showing that more cases of abortion were known a few years ago than have appeared recently, as in the experience of Mr. J. D. Porter, of Alexis, who wrote:

To your inquiry in regard to abortion among cattle I will say that I have heard no complaints during the last year; but it was quite common in a few herds a few years ago. In fact my own herd suffered for several years to such an extent that I once thought that I would have to abandon cattle breeding. One autumn when the trouble seemed to have passed I bought in Canada a lot of shorthorn heifers that were in calf. All but one of them lost their calves before spring. One of my neighbors a few miles from me once lost 18 or 20 calves out of 23 in the same way. I separated the cows that had aborted and sold them for beef, disposing in that way of 7 purely-bred cows, besides a number of grades, and had no losses thereafter.

The so-called "lump-jaw" or "big-jaw" as *actinomycosis* is popularly called, appears to be quite widely distributed throughout the State, and the total number of cases is apparently large. Every county in the State reports the existence of cases of this character. Before the Chicago department of health entered upon the vigorous crusade it has been carrying on against the traffic in diseased animals in this city, scarcely a day passed in which animals showing signs of this affection were not brought to Chicago for sale. Indeed it was believed that no harm could result from the use of the flesh of such cattle for food. Now any animal exhibiting the characteristic lesions of "big-jaw" is promptly condemned and sent to the rendering establishments, there to be converted into fertilizers.

It will be seen that the cattle of this State are comparatively free from diseases of a serious nature. Anthrax is mentioned by only ninety-five correspondents, of which number forty-seven qualified their answers by saying that but few cases were known to have occurred. Of the existence of milk sickness within recent years only fifty-five correspondents were cognizant; twenty-eight reported losses from Texas fever; twenty-six mentioned deaths of calves from lung worms (*Strongylus micrurus*); and eighty-one wrote of milk sickness as having affected cattle within the year. In answer to the query, "What diseases other than those mentioned above appear among the cattle?" and to the request that they would "kindly give the extent of the prevalence of the above and any other diseases of cattle, as to the area and also the number affected, as far as you can, with date of their appearance this year, if any, and in other years, if they were epidemic," correspondents mentioned pink-eye; hoven or bloat; mad itch; poisoning by the smut of corn; a disease new to the correspondents, and resembling blind staggers; and a few cases of hydrophobia. Outbreaks of pleuro-pneumonia, of ergotism in 1884 in Central Illinois, and of Texas fever were mentioned. A gentleman who wrote from Marengo stated that abortion prevailed there to a large extent, and a correspondent residing in Lena said that *actinomycosis* was to be seen in nearly every herd there. Several mentioned a spinal disease which affects cows in fall and winter, and J. D. Porter, of Alexis, made mention of what was apparently a like disorder, as

having appeared among the calves there last spring. With these few exceptions, correspondents united in declaring that the cattle of the several districts whence they sent their communications were free from everything of an epizootic nature, and generally free from ailments of any character. From the carefully given and quite full evidence thus presented by a very large number of intelligent observers, nearly all of them breeders of cattle who have had long experience in and wide acquaintance with the districts which their answers are intended to represent, it is clear that the profits of the cattle business in this State are seldom seriously diminished by disease. The greater losses met resulted from causes that may be prevented. Of these Texas fever has been the most destructive. *Actinomycosis* and abortion seem to be worthy of particular attention, and it is certainly advisable that every animal that shall die of anthrax shall be destroyed as completely as may be possible. When these few maladies shall have been provided against, as far as is possible, cattle-growing will be the safest, as it has been the most profitable, of farming operations in Illinois.

INDIANA.

In some respects Indiana is a most fortunately situated commonwealth. It occupies the border land between countries of widely different character. On the east was, only a few years ago, a dense forest, covering almost without break the wide expanse reaching to the Atlantic States. There thousands of streams and springs furnished an unfailing and copious supply of pure water. On the other hand was a rolling, open expanse, covered by a luxuriant carpet of grasses, and stretching across hundreds of miles to the Rocky Mountains. In this border land, that was both forest and prairie, the pioneer had plenty of timber wherewith to make safe and comfortable shelter for his family, his live stock, and his crops. For his cattle there were broad, natural pastures, deep with succulent forage, water in limitless supply, and shelter among the near by trees whenever hot sunshine or driving storm might make that refuge desirable. The climate was almost entirely free from extremes. Drought was unknown, and heavy snowfalls almost equally rare. The winters were never extremely cold, nor did summer heats cause much suffering. The wonder is that a country so greatly favored did not at once become especially notable as a cattle-growing region; but almost from the first Indiana has been a country of mixed husbandry. Her supply of cattle per capita of population does not exceed the average supply for the whole country, but in the improvement of her cattle the State outranks all except four others in the Union.

Indiana has an advantage in being near the great markets of the country. Railroads leading to them cross her territory in every direction. The Ohio and Wabash Rivers afford additional means for transportation, particularly for the southern part of the State.

The soil is generally fertile, the crops averaging well in quality and in quantity. The yield is very uniform in quantity and quality year after year. Within the State is a large and steadily increasing commercial and manufacturing population. All of these circumstances serve to encourage the practice of mixed farming, and to discourage cattle raising on a large scale. The land is held in small lots, the average size of the farms having been only 105 acres in 1880. There are no

large pastures, except on the flat, and in many places marshy, lands found in the northwestern part of the State.

Indiana extends from a line drawn from the head of Lake Michigan to the head of Lake Erie, in latitude 41° 43′ north to the Ohio River, in latitude 30° north, and from longitude 7° 48′ to 10° 30′ west from Washington. The State contained, in 1880, a total of 20,420,983 acres of land, included in 194,013 farms. These with their fences and buildings were valued at $635,236,111, or an average of $31.17 per acre. On those farms were domesticated animals valued at an aggregate of $71,068,758. Of these animals 1,363,760 were cattle.

In surface, the State is undulating, without mountains or even high hills. There is considerable prairie land, but the eastern part of the State was almost entirely covered by forests of valuable trees, before most of these were cleared away that the land might be fitted for cultivation. There are in Indiana three rivers of large size, of which the Wabash is the most important. That river rises in the northeast corner of the State, draining innumerable small lakes. It flows in a generally southwestern direction until the county of Warren, on the western side of the State, is reached. Thence the course is almost due south, trending slightly, however, to the westward, to its junction with the Ohio River. South of the middle of Vigo County the Wabash forms the line between Indiana and Illinois.

Next to the Wabash in size is the White River. Its headwaters are in the middle counties of the eastern border of Indiana. Both the east and west branches of this river flow in a southwesterly direction, and with their confluents drain the larger part of the State. The east branch has a course almost parallel with that of the Ohio River, from which it is in no place far away. In the northwestern corner of the State the Kalamazoo River, rising about a mile from the bank of the Saint Joseph River, in Saint Joseph County, flows southwest, in a line conforming generally to that of the southeast shore of Lake Michigan, from which it is from 25 to 30 miles distant. Throughout nearly its whole course in Indiana the Kalamazoo runs through a low, nearly level country, with banks quite generally marshy.

In the northern part of the State the water supply is copious in quantity and good in quality. In the southern part the streams lose their volume in autumn, sometimes to so great an extent that there is little current, and the water becomes very impure. This region was until recently the scene of much suffering and of many losses from malarial diseases among human beings and domesticated animals. With the clearing away of forests and the draining of marshes such maladies have become much less severe, and cases are far less frequent than they were. In the northern part of the State, ague was prevalent several years ago, but there seems now to be little of that and kindred ailments. Live stock have generally been free from disease in that region; but in the southern part, where cattle not infrequently find their only supply of water in stagnant pools, swamps, and sluggish streams during the latter part of summer, there are cases of malarial disorders among human beings, and cattle suffer from milk sickness, and swine from typhoid and other maladies.

THE CATTLE SUPPLY.

The United States Census of 1850 placed Indiana sixth in the list of States in regard to population, sixth in the number of her milch cows, twentieth in the number of working oxen, and fourteenth in the number of other cattle. In 1880 the State ranked seventh in the number of

her milch cows, thirty-first as to the number of working oxen, and sixth in supply of other cattle. The number of cattle of the different classes, and the relation of those numbers to the population of Indiana have been, at the dates indicated, as shown by the table given below, the number of cattle for each 1,000 inhabitants being shown in the narrow column under each census year:

Classes.	1884 (population, 2,156,348).		1880 (population, 1,978,301).		1870 (population, 1,680,637).		1860 (population, 1,350,428).		1850 (population, 988,416.	
	Number.	Per M.	Number.	Per M.	Number.	Per M.	Number.	Per M.	Number.	Pr.M.
Milch cows	*431, 483	204. 8	494, 944	252. 2	393, 736	234. 3	363, 553	269. 2	284, 554	287. 9
Working oxen.	.....	.....	3, 970	2. 0	14, 088	8. 4	117, 687	87. 1	40, 221	40. 7
Other cattle ...	680, 890	.....	864, 846	437. 2	618, 360	367. 9	588, 144	435. 6	389, 891	394. 4
Total	1, 112, 373	.....	1, 363, 760	689. 4	1, 026, 184	610. 6	1, 069, 384	791. 9	714, 666	723. 0

* From report of Indiana bureau of statistics. Returns published by the Department of Agriculture in 1884 place the number of milch cows in Indiana at 504,793, and that of other cattle at 851,355, making a total of 1,356,148. The latter figures show a marked decline in the cattle industry of the State during the four years, but it is apparently much less than that indicated by returns made to assessor.

The relation of the supply of cattle of the several classes to population has been by no means uniform. That of milch cows has been comparatively constant, the extreme variation in three decades having been 53.6 cows per 1,000 people. In 1850, when the State was new, there were 287.9 milch cows for each 1,000 inhabitants; in the ten years ended in 1860 the population grew more rapidly than did the number of cows, and in the last named year there were only 269 cattle to each 1,000 people. In the decade ended in 1870, the civil war and other causes checked the natural tendencies to increase in the number of cows, so that the percentage of increase was only 8.2, whereas in the next preceding ten years it had been 27.7 per cent., a difference of 19.5 per cent. Meantime the rate of increase in population showed a smaller falling off, the rate of gain having been 34.8 per cent., in the decade ended in 1860, and only 24.4 per cent. in the next following ten years, a difference of 10.4 per cent. It will be seen that the percentage of increase in population was 16.2 per cent. greater than that of increase in the number of milch cows. Between 1870 and 1880 the increase in population was 17.7 per cent., while that in milch cows was 25.1 per cent. This greater rate of growth in the supply of cows gave 250.2 cows per 1,000 of inhabitants in 1880, against 243.3 in 1870.

The supply, per 1,000 of population, of cattle other than working oxen and milch cows, has followed the fluctuations in the supply of milch cows. In 1850 there were 394.4 for each 1,000 people; in 1860 the number rose to 436, and in 1870 fell to 367.9 per 1,000 population. In 1880 it had risen to a point very slightly above that of 1860. The percentage of increase in "other cattle" as shown by the census of 1860, was 50.8 for the ten years ended in the year mentioned. That rate has never since been equaled in Indiana.

In the fluctuations in the supply of working oxen in Indiana may be found an indication of marked changes in the face of the country, as also in the occupations and methods of farming by the people. The number of cattle of this class rose from 40,221 in 1850, to 117,697 in 1860. During the period that passed between those two dates much of the work of clearing away forests, removing stumps, and otherwise preparing the land for cultivation, was done. For this work the steady, delib-

erate, and powerful ox was especially well adapted. In 1850 there were 46 oxen for each one hundred farms in the State; but in the ten years ended in 1870 the number shrunk to 14,088 oxen, or 8.7 for each one hundred farms. In 1880 72 per cent. of this small number had become lost to the farm labor of Indiana, leaving only 3,970 working oxen in the whole State. This almost utter abandonment of the use of oxen in farm work in a State that was once heavily timbered is significant of a very general change in the face of the country, indicating that the farms were subdued, and that smooth and comparatively level highways had become common throughout the State, and the slow ox was displaced by the more showy and active horse. It may be said that Indiana has now practically no working oxen, as it is more than likely that very nearly all of the inconsiderable number in service at the time of the taking of the last census have disappeared from use.

To those who have feared that over production of cattle will depreciate prices, there may be a grain of comfort in the fact that Indiana had for each 1,000 of her inhabitants 723 cattle in 1850; in 1860 she had 792, nearly; in 1870 only 611; and in 1880 there were 689. As the total number of cattle in this State, in 1884, was 251,387 less than it was five years ago, and as the population of the State has doubtless increased in those five years, it is quite probable that the supply of cattle per 1,000 of population is less now than it was in 1870.

DAIRYING.

Each of the last three census reports has shown a very considerable increase in the production of butter on farms in Indiana. In 1850 the output of butter thus made averaged 45.3 pounds per cow; in 1860 this average was raised to 50.3 pounds; in 1870 the average was 58.2 pounds; and in 1880 it was 76.2 pounds per cow. The total manufacture of butter in Indiana in 1880, including 334,519 pounds made in factories that year, was 37,712,316 pounds, or an average of 76.2 pounds per cow. This would furnish 19 pounds of butter per capita of population of the State. In 1850 the farmers of Indiana were reported as having made within the year 624,564 pounds of cheese, an average of 2.2 pounds per cow, in 1860 the quantity was only 605,795 pounds, or 1.7 pounds per cow; and in 1870 there was a further shrinkage in the farm production, which was only 391,487 pounds in all, including 107,680 from factories, having been made in the State. This was an average of less than 1 pound per cow. Between 1870 and 1880 cheese factories had multiplied greatly in number. In the year covered by the census report of 1880 these establishments used materials valued at $75,192, producing 1,309,264 pounds of cheese. The entire cheese product of the State that year was placed at 1,676,825 pounds, an average of 3.4 pounds per cow, the average product of butter per cow having been 76.2 pounds. There were sold in the year reported by the census of 1870 from farms in Indiana 936,983 gallons of milk, an average of 2.4 gallons per cow. Cheese factories used 130,625 gallons of that yield. In 1880 there were sold from farms 6,723,840 gallons of milk, an average of 13.6 gallons per cow. This was equivalent to 3.4 gallons for each one of the entire population of the State. For convenience of reference, and that they may be more readily comprehended, the above facts have been grouped in the subjoined table, in which the increase in the production of butter, the shrinkage in the yield of cheese made on farms, and the growth of the business

of making cheese in factories, accompanied by a corresponding increase in the quantity of milk sold from farms are indicated:

BUTTER.

Year.	Classes.	Pounds.	Per cow.	Population.
1884	Farm	34,551,428	80.6	16.0
	Factory	*245,740	0.57	0.1
	Skim-cheese factory	*46,455	0.01	.....
	Total	34,843,057	80.8	16.1
1880	Farm	37,377,797	75.5	18.9
	Factory	281,232	0.6	0.2
	Skim-cheese factory	53,287	0.1	.....
	Total	37,712,316	76.2	19.1
1870	Farm	22,915,385	58.2	13.6
1860	.....do	18,306,651	50.4	13.6
1850	.....do	12,881,535	45.3	13.0

CHEESE.

1884	Farm	690,754	1.6	0.3
	Factory	*1,035,559	2.4	0.6
	Skim cheese factory	*129,444	0.3	0.1
	Total	1,855,757	4.3	1.0
1880	Farm	367,561	0.7	0.2
	Factory	1,153,714	2.4	0.6
	Skim cheese factory	155,550	0.3	0.1
	Total	1,676,825	3.4	0.9
1870	Farm	283,807	0.7	0.2
	Factory	107,680	0.3	0.1
	Total	391,487	1.0	0.3
1860	Farm	605,795	1.67	0.4
1850	.....do	624,564	2.2	0.6

*Estimated.

The bureau of statistics of Indiana reports a total production of 690,754 pounds of cheese in 1884, but does not state whether or not any part of that quantity was factory made. If the quantity reported was all made on farms, then there has clearly been a most remarkable revival of the home cheese-making industry. On the other hand, if the quantity reported is meant to include the total output, which is not likely, then there has been a marvelous decline in cheese-making in Indiana since 1880. The output of factories and of skim-cheese factories has been estimated for 1884, making a total of 1,855,757 pounds, which shows a slight increase—178,932 pounds—over the total of 1880. It will be seen that the average annual yield of cheese has doubled since 1850, when the average was 2.2 pounds per cow. At the same time the average output affords nearly half a pound of cheese more for each inhabitant than did that of 1850.

In 1883 there were reported to assessors as having been produced in the twelve months preceding that assessment 130,303,785 gallons of milk. In 1884 the reported yield exhibited an increase of 22,111,658 gallons, making a total of 152,415,443 gallons, or 1,314,583,196 pounds. The yield of 1884 averaged 353.28 gallons, or 3,046.6 pounds per cow.

Of this a considerable quantity was consumed in its fresh condition in towns. Efforts to ascertain what quantity thus reported was sold to cheese factories and creameries in Indiana during that year have been without satisfactory result. If it should be assumed that the quantity of milk reported to the assessors included all the milk produced by the cows of Indiana that year it would be apparent that the product would not pay for the rations of the cows. The latter may be estimated as averaging 10 cents per day in cost, or $36.50 per year. To equal that cost the 353.28 gallons of average production must sell for 10.3 cents per gallon, or $1.20 per 100 pounds. If it be estimated that the general average price of farm butter produced in the State was 25 cents per pound, the total would be $8,637,856; the cheese at an average of 12 cents per pound would be worth $82,890, making a total of $8,720,747, or $20.21 per cow per year.

The estimated value of the dairy products of Indiana for 1884 is given by the bureau of statistics of that State as having been $11,050,890, which would be an average of $25.61 per cow. It is quite probable that the average annual product of the milch cows, as sold from farms, exceeds the sum mentioned. But if the sales were no more than are reported, the vast quantity of butter and of milk used by the families on farms throughout the State will bring the aggregate profit per cow up to a reasonable figure.

IMPROVEMENT OF CATTLE.

Representatives of nearly every established race of cattle found in America are among the herds of Indiana. In the year 1884 there were in the State, according to returns to the United States Department of Agriculture, 1,356,148 cattle of all classes. Of these, 38 per cent., or 447,529, plainly showed the influence of the blood of purely-bred stock. Shorthorns are found in almost every part of Indiana, having been introduced as early as 1838. There are several herds of Herefords, especially in the northern part of the State, and large and valuable herds are kept in Tippecanoe County. Aberdeen-Angus herds are reported as being in several counties, but, in some instances, at least, Galloways are described as Angus. The former named breed is mentioned by correspondents who write from localities where, there are reasons for thinking, no Aberdeen-Angus have been kept. Many people continue to call all black and hornless Scotch cattle by the name of Angus, as that name became widely known in the United States before the fact became generally understood that Galloway cattle, also black and polled, are a breed distinct from the Aberdeen-Angus.

In addition to the above-named beef breeds, a few localities have Devons, which were introduced in some quarters about fifteen years ago. Of dairy breeds Jerseys are most widely distributed through the State, appearing in all divisions from north to south. Holstein-Friesians are also generally found. Alderneys are mentioned occasionally by correspondents, but there is reason for believing that the cattle meant are Jerseys. The percentage of cattle, not purely bred, that have one-half or more of their blood from purely-bred animals ranges from 5 per cent. in some of the eastern and southern counties to 75 per cent. in the middle and northern portions of the State. As shorthorns were introduced before any other pure breed it is more than likely that a very large percentage of "grade" cattle of Indiana owe their improved character to the influence of shorthorn blood. Jersey grades probably come next, in point of numbers and value, to shorthorn grades. Animals

having part of their blood from the Herefords rank next in number, and are above grade shorthorns in value, the latter, because of the large supply, selling for such prices as farmers can afford to pay for "store" stock and for milch cows. Because of the smallness of the supply young bulls having half of their blood from Herefords sell for from $50 to $80, while heifers of like breeding sell for higher figures. Black polled grades sell for prices about the same as are obtained for grade Herefords.

As in all the older settled parts of the State north of the Ohio, the cattle are kept for the general purposes of supplying milk, butter, and beef. Of the calves born a very considerable number are killed, in some counties before they reach the age of one year. In other counties, as in the vicinity of Jennings County in the southeastern part of the State, Marion and Hendricks in the central, and Steuben and Wells in Northeastern Indiana, about 50 per cent. of the calves are thus used. Delaware, Madison, Cass, Harrison, Crawford, Washington, Floyd, and other southern counties report that 33⅓ per cent. are used for veal; Martin, Johnson, and Tippecanoe slaughter not more than about 10 per cent. of their calves; and Laporte in the northwestern, Clay in the western, Madison, Marion, Grant, Henry, and other middle and eastern counties, keep 75 per cent. or more until they are over one year old; while Fountain, Putnam, and Warren Counties in the western part, and Clinton, Tipton, Vermillion, Henry, Randolph, and Wayne, with other middle counties, report that less than 5 per cent. of the calves are thus converted into food. As in many other States, most of the young animals thus treated are used to supply the requirements of home markets, few being shipped beyond the limits of the State. In the northern part of Indiana calves from Eastern States have met no favor from farmers nor from feeders, all correspondents in that region declaring that none of that kind have been bought. Warren County correspondents say that calves as well as older cattle are brought there from the East.

Eastern calves have gone into pastures in Middle and Eastern Indiana, but the number has been small. The eastern and southern counties appear to depend almost entirely upon the natural increase of their own herds for stock grazing and for feeding purposes. A few store cattle, "stockers" or "feeders," are taken from Louisville, Ky., to Harrison, Crawford, Washington, Floyd, and other counties in the southern part of Indiana. Chicago is a market from which feeders have been taken to the eastern counties, but those districts obtain some cattle of the kind from Ohio, and also from States beyond the Mississippi. Correspondents say that one-half of all the beeves matured in the counties of Vermillion and other counties in Western Indiana come from other States. Putnam County imports from other States considerable numbers of store cattle in spring and autumn, for grazing and feeding, but the greater part of the supply is obtained from adjacent counties. The northern counties also import a limited number of stockers for grazing, and feeders for grazing and fattening. These are obtained from the neighboring State of Michigan, and for the northwestern counties, from Chicago. As far as possible those who buy cattle for grazing select grade shorthorns. Of necessity their next choice falls upon the best specimens of so-called "natives." Very few young Aberdeen-Angus, Galloway, Hereford, or Holstein grades are sold for grazing or for fattening for beef. Such grades are so valued for breeding purposes that the feeder and the grazier cannot afford to pay, for his purposes, the price demanded for such stock.

There is a curious diversity of custom between the several districts of the State, in regard to the time of buying store stock. In some parts cattle intended for grazing are bought in late autumn and during the winter months, and are fed upon straw, cornstalks, and other "roughness," until grass comes up in the following spring. Many others buy in February, March, and April, that they may have but little need for feeding before their pastures will afford sufficient grass to keep their stock alive. Still others wait until May or June, when their pastures have become so settled that tramping will not injure them, and when the grass has a strong start. It is thought by some that both cattle and pasture do better when thus managed than when stock are permitted to go into the fields earlier, and keep the grass eaten off closely, exposing the sod to the sunlight. Not infrequently young stores are first bought in the fall, "roughed" through the first winter, kept upon good pasture through the summer, and fed through the second winter, to be sold during the following spring. The investment in cattle thus remains from fifteen to eighteen months. Another plan, by many thought to be a better one, is to "rough" the steers through the winter, adding a ration of grain to their diet. When grass comes the supply of grain is increased until the cattle get all they can safely digest. They are fat when early winter comes and go to market about a year from the time of their purchase by the feeder. Ten years ago three and even four year old bullocks were chosen for grazing purposes in this, as in other Middle States. Now two and three year olds are preferred by most, with a general leaning toward the younger cattle, and an increasing tendency in many parts of the State to buy yearlings in preference to older stock at higher prices. A like change is found in the selection of cattle for full feeding. Where ten years since the preference was for animals four or five years old, those two or three years old are now selected.

Full feeding begins with some in the spring, as mentioned above, and the stock thus fed are sent to market in autumn and early winter. When fattening begins in the fall the stock are marketed in the following spring. Many farmers sell as soon as their cattle are matured, but others hold their beeves until the market is in satisfactory condition, or until there appear to be reasons for thinking that further delay will be unprofitable. When fully fattened the beeves of Indiana range in age from two to four years old. Of these a considerable percentage are sent to market when only partially matured, or "grass fat." Correspondents place the number thus marketed as ranging from 30 to 75 per cent. in their several counties. Probably the average number of cattle thus sent to market from grass, without being fed on grain, would be fully 60 per cent. of all the beeves sold, and it is more likely to rise above than to fall below that percentage. The average weight of beeves alive when marketed ranges from 800 to 1,100 pounds when kept upon grass alone, and from 1,800 to 2,000 pounds when fully matured. Including cows, heifers, and bullocks, it is likely the weights of the entire supply would average from 1,100 to 1,300 pounds.

From Central and Eastern Indiana cattle are sent to Eastern markets, many going to Buffalo or to Pittsburgh, thence to Boston, New York, and Philadelphia. A few are sent to Cincinnati from the southeastern and central part of the State, and a much greater part of those raised in the central-southern part go to that market. Pittsburgh, however, seems to be the favorite market for the cattle-growers of Eastern and Southern Indiana. Harrison, Crawford, Washington, Floyd, and other counties in the central part of Southern Indiana ship stock to Louis-

ville, Ky. In the northwestern part of the State, shippers divide their consignments between Chicago and Buffalo, Albany or other Eastern markets. Indianapolis receives quite a supply from that section of the country also, there being in that place stock-yards of considerable importance. Steuben, Wells, and other northeastern counties find a market in Buffalo.

Except in a few counties there is seemingly no objection to slaughtering calves for veal. In the northern half, prices for veal calves range from $6 to $7 for animals from six to eight weeks old, and from $12 to $15 for those of six to eight months old, when the latter have run with their dams and are well grown. In some places the habit seems to be to sell calves by weight, prices ranging from 4½ to 6 cents per pound alive. There appears to be no means of arriving at any correct estimate of the number of calves thus used each year, but it is enough to make a marked difference in the supply of cattle for beef and for dairy purposes.

COST OF PRODUCTION.

The estimated value of the 194,013 farms in Indiana, in 1880, was placed at $635,236,111. These farms contain 13,938,788 acres of an average value of $32.74. In the northern part of the State the value given to lands ranges from $40 to $150 per acre, where these lands are cultivated, and from $25 to $40 per acre for uncultivated grazing lands. In the central-western part of the State prices range from $30 to $40 for grazing land, and from $45 to $80 per acre for lands that are tilled. In the central counties of the State there seems to be less range in prices, the average being very close, seemingly, to the general average given above for the State. The lowest price in Central Indiana was named by a correspondent in Johnson County, who mentions a range of $30 to $80 per acre. In the central-eastern part of the State there is little uncultivated grazing land, and prices range from $40 to $75 per acre, and even to $100. In the southwestern corner of the State $25 per acre is quite commonly given as the average value of the land. In one county only, Jennings, is a lower figure given. This, $15 per acre, is the lowest price named for lands anywhere within the State.

Six to 8 per cent. per annum are the uniform rates of interest throughout the whole State, 8 per cent., the legal rate, being given quite generally.

In 1884 the corn crop of Indiana was 89,159,799 bushels from 3,137,840 acres. In 1883 the yield was 89,699,237 bushels from 3,125,376 acres, averaging 28.52 bushels per acre. The greatest average yield per acre in any one county was attained in Tippecanoe, when 42.7 bushels per acre were harvested.

Of oats, Indiana produced in 1880 a total of 15,599,518 bushels; in 1883, from 456,287 acres, 19,567,789 bushels were harvested. In 1884 there were 791,343 acres, which produced 23,581,108 bushels. The highest average yield per acre was 42.25 bushels in Randolph County. The State of Indiana was credited by the census of 1880 with the production of 1,361,083 tons of hay in the year covered by the returns presented in that compilation. In 1882, in the State, 1,599,941 tons of timothy and 836,034 tons of clover hay were made. In 1883 the yield was 1,831,137 tons of timothy and 1,628,519 tons of clover, from 2,106,938 acres, making an average of 1.64 tons per acre. In 1884 the area in timothy was 1,247,099 acres, from which 1,946,342 tons of hay were put up. There were that year 908,238 acres of clover, producing 1,501,860 tons of hay, making a total of 3,448,202 tons from 2,155,337 acres, an aver-

age yield of 1.6 tons per acre. The cost of making the hay averaged not far from $1 per ton.

In the early spring of the current year corn on the ear ranged in value in Indiana from 25 to 50 cents per bushel, the general average being 35 cents. Cornstalks were worth from 25 cents to $2 per acre, with a very few correspondents reporting prices higher than those mentioned, one going as high as $5 per acre. The cheapest cornstalks seem to be in Wells County, in the northeastern part of the State; but in adjoining counties prices were considerably higher. Hay ranged at that time from $4 for prairie to $12 for timothy per ton. As a rule, however, clover hay seems to have sold for $8 per ton and timothy at about $10. Straw sold from 50 cents to $6 per ton, but usually $2 per ton was the current value on farms.

Pasturage per acre per month is reported as being worth from 50 cents to $2; but the custom in many counties seems to be to charge a certain price per head for cattle and horses, this price being in some instances $1 per month per head for grown cattle. In other cases, $2 per head for the entire season was charged. For cattle on "full feed" the rations given range from 8 to 15 bushels of corn per month to each animal; of hay, if no cornstalks or other coarse fodder is given, from 900 to 1,000 pounds per month. There seem to have been but few who gave much attention to the details of feeding, and, as a rule, correspondents found it difficult to state what quantities were customarily fed on grain, hay, cornstalks, or other forage. In fattening bullocks the conclusion seems to be, however, that about 90 bushels of corn and 2.5 tons of hay is sufficient to fully ripen the average bullock. Upon such a diet as this the increase of fattening cattle ranges from 40 to 100 pounds per month. Animals reported as making the latter growth are such as possess a considerable strain of the blood of the pure beef breeds. One correspondent says upon this subject that cattle that are graded up with some of the beef breeds gain much faster than the natives, and places this increased gain at from 30 to 40 pounds per month.

In reply to the question, "What difference is there in the increase per bushel, per ton, or per month, between yearling, two-year-old, and three-year-old bullocks?" some correspondents replied that there was a marked difference in favor of three-year-old cattle; that they gave a much better return in increase of weight for the amount of food given to them than did the others. But this was by no means the unanimous opinion. One correspondent said that "the yearling has it by about 20 per cent. The two-year-old will make less gain than either of the others, and the three-year-old is preferred where corn is fed." But another correspondent holds a directly opposite opinion, and says that the two-year-old will increase from one-quarter to one-third more than three-year-olds on the same quantity of feed.

Very few foods other than corn and hay are used in fattening cattle in any part of the State, corn being, according to the reports of correspondents generally, the staple grain feed for live stock. Bran, shorts, mill-feed, refuse from starch works, ship-stuff, and "mill offal" are fed to a limited extent. Cut oats mixed with middlings are used, but not in quantities great enough to be worthy of special notice.

As to cost of maintenance in winter, it is found that two men for $15 per month each can attend 75 head of cattle, and do other work besides. The maintenance of team and two men would amount to $25 per month. In some cases it has been found that 75 to 80 head of cattle can be attended at a cost of about $45 per month. One man can attend to two or three car-loads almost as easily as he can to one car-load.

Many farmers have horses that would be idle if they did not have the work of hauling feed for stock, and therefore all of their part of the attendance on the cattle is nominal in cost, it being rather an advantage to the horses than otherwise, as it affords exercise for them. One correspondent gives it as his opionion that $1 per head per month would be a fair compensation for a man's labor in winter, and 50 cents per head per day for the cost of the team used in feeding the cattle. The cost per head of caring for cattle depends very largely upon the number in the lot and the kind and amount of attention given. A careful correspondent, Mr. John A. Thompson, of Johnson County, Indiana, estimates the cost of caring for cattle, where 100 head are in one lot, at 1 cent per head per day for attendance, including wagons and maintenance of men, and 1 cent per head per day for the maintenance of the horses or other teams used in hauling food for cattle. This would make the cost about 60 cents per head per month. Another correspondent in a neighboring county thinks that the average cost would be $1 per head per month. Mr. J. W. Kent, of Vermillion County, concludes that one man will feed 100 cattle in a lot at $20 per month; one team will haul the feed which will be $20 more. This includes the cost of wear of wagons, feed and care of horses, and other necessary outlay of the kind.

In many counties cattle are housed in winter; but in some, with the exception of milch cows, cattle are not thus sheltered, but are allowed to run in feed-lots, where timber breaks the force of the storms to some extent. However, a change is taking place in this respect, as it has been found that it does not pay to feed cattle out of doors.

Almost universally swine are allowed to follow and feed with cattle that are fattening, one hog being allotted to each steer, as a common rule. Hogs thus turned in with cattle are expected to make from 75 to 200 pounds growth during the time the cattle are fattening, and should gain, in the estimation of a number of feeders, 1 pound per day increase in weight.

In the opinion of many correspondents there are considerable advantages in favor of summer feeding as compared with feeding in winter, except in cases where stock have very warm winter quarters. Some place the difference at from 20 to 30 per cent. in favor of summer feeding. One writes that, in his experience in feeding, 5 bushels of corn less per head than is required to fatten them in winter will produce a like amount of flesh in summer time. Another says, "In this country the winters are so disagreeably cold that it costs as much again to produce 1 pound in winter as in summer," or that the cost of fattening in winter is twice as great as that of fattening in summer. In his opinion he is in agreement with a number of others, who say that in their experience it has been found that feeding in summer yields double the profit gained by feeding through the winter, since stock will in warm weather gain much more in weight than they will in cold weather with a corresponding outlay of food and labor.

THE WATER SUPPLY.

The water supply of the northern part of Indiana is obtained from springs and wells, and from ponds and lakes that, having both inlet and outlet, do not become stagnant. Tile drains have in some localities furnished an ample supply of water for stock during several months of each year. It is stated that in the counties of Vermillion, Elkhart, Tippecanoe, Warren, Fountain, and a few others, 50 per cent. of the cattle now obtain their drink from tile drains, particularly in the spring and

early summer months. It is thought that water from that source is almost, if not quite, as good as that from othersfor stock. Water from such drains is also used to a large and increasing extent in the southern part of the State. Many farms are furnished with windmills, which pump from wells a supply which is generally uniform in quality and ample in quantity throughout the year.

In some districts the sources of supply whence cattle obtain water become stagnant, particularly in the latter part of the summer and in autumn. It is observed that in localities where this occurs the maladies popularly known as black-leg, bloody murrain, dry murrain, "big-jaw" or "lump-jaw," as *actinomycosis* is called, "milk sick," and other disorders prevail more generally than they do in regions where the water is pure and frequently renewed.

Milk sickness is a malady of obscure origin. The disease was far more commonly met in the southern part of Indiana and Illinois than in the northern half of those States, and much more frequently when the country was new than since the prairie sod gave place to cultivated crops, and the pools were drained. In certain marshes in Indiana, particularly along rivers in which the current almost disappears during the dry season of each year, cattle not infrequently become affected by a disorder which usually, if not invariably, proves fatal within a short time after the first appearance of its symptoms. The cause of the disease is not generally known, but the investigations made by Joseph Gardner, M. D., of Lawrence County, Indiana, led to the formation of the opinion that the disease is caused by the presence of myriads of bacteria. Describing the results of a microscopic examination of the blood taken from a heifer which was suffering from the malady, and died thereof three days after the blood was taken from her, Dr. Gardner says:

On submitting the blood on a slip covered by a thin cover glass to a Spencer 1-10 objective, I was startled, but not surprised, to see that in the small space embraced in the field, and which could be covered by a transverse, section of a fine cambric needle, there were countless multitudes of actively moving, writhing, twisting bacteria that bore in size and behavior a striking resemblance to that form of bacteria called by naturalists *Bacilla subtilissima*. They seem to cling to the blood disks, to be between them, to be within some of them, and to be in such an innumerable multitude as to fairly fill the observer with horror at the bare thought that the blood of even a domesticated animal should have such terrible inmates. Not only I, but numbers of others saw them, and seeing were convinced. But further, some dogs ate of the dead cow, and they too were attacked by the slows, and in brief their blood also showed the same form of bacteria.

Knowing that some of the family attacked had not eaten of milk or butter, but had still suffered from the disease, and wanting a reason for it, I subjected the water obtained from the springs to a like process and found that, though it appeared clear and nice to the unaided vision, it was as full of the same forms of bacteria as appeared in the blood as was the blood itself.

Next I took some milk from a cow whose milk was used in another family where one case of the slows had occurred, and found that that also showed the same living organisms as were in the blood and water. Since then the blood of two persons, not severely attacked, has been examined microscopically, and the same phenomena, only in a lesser degree, were present.

The slows (milk sickness) never prevails in wet seasons, when the springs are flush and the branches full. I do not assert that the water is the only place outside of animals that the bacteria may propagate in in sufficient quantities to cause the specific effect described, as this field is too new for such exclusiveness; but we may rest assured that if the cattle and the families have water of unquestionable purity the other sources and uses will not be prominent factors in its production.

Gastritis and bilious fever are the only diseases that the practitioner will ever be likely to confound with slows. The treatment of slows is in itself a vindication of my pathology. Brandy and honey or sirup, and sulphur and magnesia, given in full doses every two hours, speedily produce a good effect, and convalescence soon follows the aperient effects of the latter remedies.

The same authority states that the reception of the disease has never been known to take place otherwise than by the stomach. The flesh, milk, or butter of infected animals are the causes to which it may usually be traced, and more than one person is generally prostrated by the same cause. Sometimes different members of one family are affected in different degrees, from the most severe to that peculiar condition in which the legs are so weak as to refuse to perform their office. The last form goes by the expressive vernacular title of "slows."

Milch cows may give no signs of the malady until they have imparted it to their calves, or through the medium of milk and butter, have infected whole families. The disease is caused in human beings, dogs, and other animals by their eating the flesh of stock affected. It was this fact which led Dr. Gardner to conclude that the septic matter could not be any of the known organic or mineral poisons to which the origin of the disorder was popularly ascribed, as cobalt, arsenic, *Rhus toxicodendron* or poison sumach, nor *Eupatorium agertoides*, a species of weed having a white or a purple top, growing in great abundance in woods and clearings almost everywhere, even where milk sickness was never known.

In September of 1884 grave fears were excited by reports published by newspapers, to the effect that pleuro-pneumonia was killing cattle in the neighborhood of the village of Mitchell, in Lawrence County, Indiana. The writer visited the scene, and there met Dr. Yost, who had obtained blood from one of the animals affected. This blood was placed under a good microscope, and was found to be swarming with the bacteria described by Dr. Gardner. It was observed that many of the forms appeared to be identical with some of those shown and described by John Saulisbury, M. D., in his treatise on malaria, as being present in the blood and in the sputa of patients suffering from malarial diseases. The same forms appeared in the exhalations from earth infested by the ague plants collected by the last-named gentleman in his studies of malaria from places where there was reason for believing that ague and kindred maladies had their origin.

Cattle showing *actinomycosis*, popularly known as big-head, lump-jaw, or snake-bite, are found widely distributed throughout the Middle and the Western, and in some, if not in most, of the Southern States. Until a comparatively recent date animals thus afflicted were freely sent to market and their flesh used for food for human beings. In 1882 the writer prepared for publication in certain newspapers articles stating some of the facts relating to the extensive traffic in diseased meats in the great live-stock markets. The continued agitation of the subject which followed resulted in the adoption of persistent and determined efforts by the authorities to stop the sale of the flesh of diseased stock as food for humanity. Cattle showing symptoms of the malady named are now promptly condemned upon arrival at the stock-yards, and their carcasses go into the tanks, that the tallow may be extracted and the remainder be converted into fertilizers. One effect of this condemnation of animals showing the existence of disease is that such stock are now promptly disposed of by farmers, at least in many instances, before the malady has developed enough to become plainly noticeable, instead of being kept by them to breed, and thus perhaps intensify and perpetuate the tendency to this disease. Another and an important result is that the meat supply is much more wholesome than it was formerly.

The cattle of Indiana are free from epidemics. The few diseases by which they are occasionally afflicted have affected but a limited number

of animals, and these are scattered. Even in those regions where milk sickness is most frequently seen the losses are really few, and cease upon the purification of the supply of water. With the drainage of stagnant pools and the digging of deep wells this disease will no doubt disappear, as it has already done in other places where the needed changes have been made.

OHIO.

In climate Ohio is temperate, its soil is fertile, and its surface is in most parts hilly enough to afford ample drainage facilities for carrying off surplus rainfall quickly. There are few swamps or marshes in the State, and over a large part of its area pure sparkling springs abound, while swift, clear streams flow through almost every county, excepting perhaps a few in the northwestern part. These sources furnish a supply that is generally ample for all wants of stock, and the purity and sweetness of the water make it especially useful for the purposes of the dairy. The State extends from longitude 3° 30′ to 6° 45′ west from Washington, and from the shore of Lake Erie southward to the Ohio River, which forms all of the southern as well as a large part of the eastern boundaries of the State. That river and its confluents drain the southern half of Ohio, and much of its eastern part. The whole surface of Ohio was a few years ago covered by forests of walnut, chestnut, and other trees that would now be of great value for use in the arts and industries. Those forests have in a great measure, if not entirely, disappeared from the valleys. Many of the hills are covered by a growth of trees, but these are as a rule inferior in size and in present value to such large ones as they have succeeded. In the places that were, even so recently as a single generation ago, occupied by forests, there are now more than a quarter of a million farms, aggregating more than 24,530,000 acres in area. By the United States Census Report of 1880 the value of these farms was placed at an average of $46 per acre. In 1870 there were in Ohio farms 21,712,420 acres of land, valued at $1,054,465,226, an average of $48.56 per acre. In 1860 this State had included in farms 20,472,141 acres of land, valued at $33.12 per acre, and aggregating in value $678,132,991. In 1850 the total value of the 17,997,493 acres in farms was only $358,758,603, or $19.93 per acre. These figures show an increase of 6,531,733 acres in cultivated or inclosed lands between 1850 and 1880. In that period the average value per acre had risen 131 per cent., or $26.07, the total difference between the aggregate value of the farms of 1850 and those of 1880 amounting to $768,373,750. This was equivalent to an average annual gain of 3.8 per cent. in the total valuation, making a total of 114 per cent. in the thirty years covered by the above statistics.

It will be observed that there was a shrinkage of $2.55 per acre in the valuation of land in Ohio between 1870 and 1880. This was doubtless an effect of the panic of 1873, which reduced so greatly the value of most property in the United States that the old values have not been restored even to this day except in a few favored and limited localities. During the decade ended in 1870 the increase in the average valuation per acre was 4.66 per cent. per year, which was 0.86 per cent. per annum more than the rate of increase for the entire thirty years covered by the census reports quoted.

THE CATTLE SUPPLY.

As is usually the case with people accustomed to dwelling in heavily timbered regions where the dense shade prevents the growth of sweet and nutritious grasses in quantities great enough to afford sustenance to any considerable number of cattle, the early settlers of Ohio had habits of thought which were not favorable to a rapid and extensive growth of the business of raising stock. The influences that prevented an early growth of that branch of agriculture continued to operate up to the time of the collection of the statistics for the last census, and perhaps even to the present time. Ohio is largely a manufacturing and commercial State, and finds within her own borders a ready market for a very large part of the products of her fields and orchards; her farmers therefore seem to prefer the practice of mixed husbandry, and to think that their lands are too valuable to be used as grazing grounds for stock. In 1880 there were in the State 581.6 cattle for each 1,000 of population, while the whole United States had at that time 716.3 cattle per 1,000 inhabitants, or 143.7 more than Ohio had.

The supply of cattle of the several classes in Ohio, and the relation of that supply to the number of inhabitants of that State were, at the time indicated below, as shown by the subjoined table, the number of cattle of each class per 1,000 inhabitants being given in the narrow column under each year represented:

Classes.	1884 (population 3,741,730 *).		1880 (population 3,198,062).		1870 (population 2,665,260).		1860 (population 2,339,511).		1850 (population 1,980,329).	
	Number.	Per M.	Number.	Per M.	Number.	Per M.	Number.	Per M.	Number.	Per M.
Milch cows ..	781,996	208.9	767,043	239.8	654,390	245.5	676,585	289.0	544,499	275.0
Working oxen	.....	.....	8,226	2.6	23,606	8.8	63,078	27.0	65,381	33.0
Other cattle...	1,017.820	272.0	1,084,917	339.2	758,221	284.5	895,077	383.0	474,067	378.2
Total.....	1,799,816	480.9	1,860,186	581.6	1,436,217	538.6	1,634,740	699.0	1,358,947	686.2

* Estimated.

For the purpose of convenient comparison, the relation of the cattle supply of the whole United States to the population of the whole country is presented herewith:

Classes.	1884.		1880 (population 50,150,783).		1870 (population 38,558,371).		1860 (population 31,443,321).		1850 (population 23,191,876).	
	Number.	Per M.	Number.	Per M.	Number.	Per M.	Number.	Per M.	Number.	Pr.M.
Milch cows...	13,501,206	253.3	12,443,120	248.1	8,935,332	231.7	8,585,735	273.0	6,385,094	275.3
Working oxen	.....	.....	993,841	19.8	1,319,271	34.2	2,254,911	71.8	1,700,744	73.3
Other cattle...	29,046,101	591.6	26,238,572	523.1	13,566,005	351.9	14,779,373	470.0	9,693,069	418.0
Total.....	42,547,307	844.9	39,675,533	791.0	23,820,608	617.8	25,620,019	814.8	17,778,907	766.6

In "other cattle" in the account for 1884 are included working oxen, as there were at hand no data from which the number of cattle of that class in the country could be ascertained.

It will be noted that in 1850 Ohio had very nearly the same number of milch cows per 1,000 inhabitants that the whole United States had at that time. In 1860 and 1870 Ohio had more than the general aver-

age. But in 1880 the supply of the State fell considerably below that average. As in all the other States, except one, the number of working oxen has decreased year by year. In early times when such cattle were needed to assist the farmer in clearing his land of forest and in breaking up the soil, Ohio had 33 oxen to every 1,000 inhabitants, or 45 per cent. of the number per 1,000 for the whole country. In 1860 she had but 27 oxen to each 1,000 people. By the time the census of 1870 was taken that number had dwindled to 8.8, and during the next ten years that small number shrank to 2.6 per 1,000 of population. It may be assumed that working oxen are now practically unknown to Ohio agriculture, as they have become in Indiana and Illinois also.

Of cattle other than those mentioned above, Ohio had 339.2 per 1,000 of population in 1880, which was 54.7 more than that State had in 1870, and 43.8 less than it had in 1860. This fact may be accepted as indicating that the cattle interest of the State was recovering from the exhaustive demands made upon it during the late war.

The returns made by assessors to the Ohio auditor of State showed that in 1883 there were but 1,504,084 cattle in the State, or 356,102 less than there were in 1880. This number was increased in the returns of 1884 to 1,612,148, showing still a shrinkage of nearly a quarter of a million in the cattle supply in four years. Various causes are assigned for this falling off in the cattle business, among them a decline in the price of beeves and a marked advance at the same time in the selling value of grain, particularly of corn, which in Ohio, as in most other States of the Union, is the staple fattening food for stock.

When the prices of corn and hay rise to a high range the production of beef decreases, except in those regions where feeding of grain is not practiced. Practical farmers say they cannot afford to fatten cattle on corn worth 50 cents or more per bushel when fully ripened beeves of about 1,500 pounds sell alive for less than 6 cents per pound. When corn rises to 60 cents per bushel, and fat bullocks sell for 5 or 5½ cents per pound alive in the great centers of the cattle traffic, great numbers of farmers refuse to undertake to fatten cattle.

The depressing effect upon the dairy interests of the presence of vast quantities of imitations of butter has been advanced as one potent reason for the shrinkage in the number of milch cows, as shown by the auditor's report for 1883, compared with the statistics furnished by the United States census of 1880, the falling off in number having been 190,896. It is more than likely that the two causes combined did much to bring about that decrease.

FORAGE.

Cattle have never been kept in large herds in Ohio, the nature of the country forbidding grazing except in a small way, almost universally in pastures inclosed as parts of cultivated farms or in small tracts of woodland. In the latter there has been no such growth of grasses, suitable for grazing stock, as exist in the more open and airy Alabama and Georgia forests. As the timber was destroyed in Ohio, grasses and other forage plants were introduced by man, or sprang up, and spread until the State became able to support gradually increasing herds and flocks. The principal cultivated grasses and forage plants of Ohio are timothy, redtop, and June grass, orchard grass, blue grass, red and white clover, and herds-grass. Of native grasses there are comparatively few; a limited number of varieties grow on wet ground.

In the latter part of the winter of 1884–'85, and the early spring of the current year, before grass had grown sufficiently to afford pasturage, hay was quoted in Northwestern Ohio as being worth from $5 to $10 per ton on the farm where made, the general average price being about $8. In the counties of Northern Ohio, $7 to $12 was the current range, most correspondents giving the price as from $8 to $9 per ton. In the northeastern corner of the State $8 to $16 were the prices, most sales having been made at $12 per ton. In the middle western counties $6 to $10 covered the range, with sales largely at $8 and $9. In the middle of the State hay sold on farms, in stack or barn, at from $6 to $10, rising in some cases to $12 and even $13. In the eastern part of the State, $10 to $15 were obtained; while in the southern part prices ranged from $8 to $12, the bulk of sales in the southeastern corner seeming to have been at $10 to $12. Farther west the range was from $8 to $10.

In 1880 the hay crop of Ohio was 2,210,923 tons; in 1883 there were put up 2,483,103 tons of timothy and 613,669 tons of clover, making a total of 3,101,772 tons of hay. This was an increase of 890,849 tons in three years, or an average annual gain of 296,950 in the quantity of hay harvested. If there was a corresponding increase in the crops of 1884 and 1885, those crops would amount respectively to 3,398,722 and to 3,695,672 tons, which at the valuation of 1884 would be worth $36,956,720.

Of grains usually fed to stock, Ohio produced in 1880 of maize 3,281,923 acres, averaging 34.1 bushels per acre, or an aggregate of 111,877,124 bushels. In 1883 the yield was estimated at 64,001,618 bushels of shelled corn. In 1884 the area in maize was 2,517,541 acres, which, at an average of 24.19 bushels per acre, would amount to only 60,899,316 bushels. Of oats the State produced 28,664,505 bushels in 1880. In 1883 the yield was only 23,042,867, the average yield per acre having been 32.7 bushels. At that rate of yield the estimated crop for 1884 should have been 24,969,820 bushels. No grain crops other than oats and Indian corn enter into use in feeding stock, except in the form of mill offal or by-products of wheat milling.

IMPROVEMENT OF CATTLE.

Ohio was among the first of the States of the Union to enter systematically upon the work of improving cattle, the Renicks having taken shorthorns into Ohio in the early part of the current century. From that day to this shorthorns have been a popular breed in that State. As a consequence there is scarcely a county in the State where there are not herds of purely bred shorthorns, or "grades" having a considerable percentage of the blood of that valuable race. Yet some correspondents, in answer to the question, "What are the chief characteristics of the cattle commonly found in your vicinity," state that the supply of cattle is composed of "scrubs" or common unimproved stock. Besides shorthorns there are in Ohio herds of Aberdeen-Angus, Devons, Galloways, and Herefords in the line of beef cattle, and of Ayrshires, Jerseys, and Holstein-Friesians as dairy breeds. Alderneys are mentioned by a number of gentlemen as being among the dairy cattle, but it is not unlikely that they are Jerseys. Jersey cattle and their grades are scattered through many parts of Ohio, as the shorthorns are; Holstein-Friesians are spreading with considerable rapidity, and the several beef breeds mentioned above are gaining ground rather more slowly than are

the dairy races named. Aberdeen-Angus are found in Erie and in Huron Counties, in Northern Ohio, and in Butler County, in the southwestern corner. Galloways are in Fayette, Ross, and Huron Counties.

Of the 1,799,816 cattle owned in Ohio in 1884, 40 per cent. were "high grade," or had one-half or more of their blood from the improved breeds named above. No other State except Kentucky equals Ohio in the percentage of good blood in its cattle. Estimates by Ohio correspondents place the percentage of improved blood in the cattle of the several counties covered by their reports at from 2 to 95 per cent. It is quite likely that one of these estimates is as much too high as the other is too low. About half of the correspondents say that in their respective districts cattle are kept chiefly for the purpose of making beef. In others, as in Van Wert, Williams, Huron, and other northern counties, cows are quite generally kept to supply milk for use in its natural condition or for butter and for cheese making.

DAIRYING.

As in all regions where mixed husbandry is the rule, cattle in Ohio are made to serve several purposes. The male calves that are not condemned to slaughter at an early age are castrated, and brought to maturity for use as beef. The cows are expected to supply milk and butter for the use of the owners, and for sale to retailers in towns, or to cheese or butter factories. When no longer useful for that purpose they are fattened and sold to the nearest butcher, or to the shipper of stock, who consigns them to that market which promises to give the best return. The number of cows kept for dairying in Ohio make 77 per cent. of the total supply of cattle in the State. The percentage of cows kept for dairying exclusively ranges from 10 in some localities to 95 in others. It will be seen by reference to the table given that the increase in the number of milch cows in Ohio has not kept pace with the growth of population during the last three decades. In 1850 that State had 544,499 milch cows, or 275 to each 1,000 of population. In 1860 the number had increased to 676,585, which gave 289 cows to each 1,000 inhabitants. In 1870 the number of cows in the State had fallen to 654,390, which made but 245.5 cows per 1,000. In 1880 the number had risen to 767,043, or 239.8 cows per 1,000 of population. In 1884 the number of milch cows had decreased to 781,996. In the United States the number of milch cows in 1850 was 275.3 per 1,000 of population; in 1860 it was 273; in 1870 it fell to 231.7, and in 1880 rose to 248.1.

According to the census of 1880 the cheese factories of Ohio used 325,527,447 gallons of milk in the year 1879; it is also reported that there were sold or sent to butter and cheese factories from farms in Ohio, that year, 46,801,537 gallons of milk. If no part of the last mentioned quantity was included in that reported by the factories, the total output of milk by the farms was 372,328,984 gallons in the year named. Of butter there were made on farms, 67,634,263 pounds; in addition to this there were made in factories 235,341 pounds, making a total of 67,869,604 pounds of butter, or an average of 88.5 pounds per cow. Had this all been sold for the price obtained for that made by factories it would have been worth $11,537,833. It is probable, however, that the average price received for butter made on the farms was considerably less than that made in factories.

The quantity of dairy products of the several classes, the average prod-

uct per cow, and the average quantity of butter and cheese per capita of population in 1870, in 1880, and in 1883, are shown in the table below:

BUTTER.

Classes.	1883.			1880.			1870.		
	Pounds.	Population.	Per cow.	Pounds.	Population.	Per cow.	Pounds.	Population.	Per cow.
Farm	49,760,673	*13.3	86.4	67,634,263	21.2	88.2	50,266,372	18.90	76.80
Factory	3,040,305	0.8	5.3	235,341	0.1	0.3	1,937	0.01	0.01
Skim-cheese factory	.....	.....	.....	1,852,902	0.5	2.4	.....	.....	.....
Total	52,820,978	14.1	91.7	69,722,506	21.8	90.9	50,268,309	18.91	76.81

CHEESE.

Farm	1,834,169	*0.4	3.2	2,170,245	0.7	2.8	8,169,486	3.1	12.5
Factory	22,868,209	6.2	39.7	17,808,191	5.6	23.2	15,984,390	6.0	24.3
Skim-cheese factory	.....	.....	.....	12,553,247	3.9	16.4	.....	.....	.....
Total	24,702,378	6.6	42.9	32,531,683	10.2	42.4	24,153,876	9.1	36.8

*Estimated.

NOTE.—In the year covered by the United States census report of 1850, which was the first one in which an attempt was made to give the agricultural statistics for this country, the total production of butter in Ohio was given as 34,449,379 pounds. This would have allowed an average of 17.34 pounds per capita of Ohio's population, and would have been an average production of 63.26 pounds per milch cow. In 1860 the total production reached 48,543,612 pounds, equaling 20.75 pounds per capita, and 71.75 pounds per cow. In 1870 there were produced an average of 76.8 per cow, or 18.9 pounds for each one of the population as it then was. The average quantity per cow has grown from 63.26 pounds per year in 1880 to 91.7 pounds in 1883. This shows a gain of 28.44 pounds, or nearly 45 per cent., in the average annual production of the cows. It is not unlikely that these figures represent a close approach to accuracy the actual improvement made by improved methods in managing cattle and in handling milk in making butter. The product of butter per cow, on farms, in 1883, was 23.14 pounds, or about 37 per cent. more than in 1850; it therefore appears that to the better methods of butter making as practiced in factories, 8 per cent. of increased production is due, the remainder being the result of better care of the stock and better blood.

The larger quantity of butter made represents only part of the gain made in dairying. In 1860 the average quantity of cheese made in Ohio was 39.95 pounds. In 1870 it was 36.9, and in 1883 it was 42.9 pounds per cow. This equals an aggregate gain of 1,728,440 pounds in the output of the year.

There is a noteworthy approach to uniformity in the average quantity of cheese and of butter made per year per capita of population, as shown by the census reports. The smallest quantity of cheese made would allow each inhabitant of the State 6.6 pounds for 1883; the largest quantity would have been 10.57 pounds in 1850, the difference having been 3.97 pounds. Of butter the greatest supply per capita in any one year was 21.8 pounds in 1880, the smallest was in 1883, when returns made by assessors showed that it was only 14.1 pounds. It is the opinion of Hon. W. I. Chamberlain, secretary of the Ohio State Board of Agriculture, that the returns for 1884 will differ but little from those given for 1883.

The quantity of butter reported above as being the average supply per capita would have furnished to each person a little less than one ounce of butter per day in 1880; but according to the figures reported by the Ohio assessors for 1883, there were made only 0.62 ounce of butter per capita per day. As Ohio exports considerable butter there seems to be good reason for doubting the accuracy of the figures given by the assessors.

It is to be regretted that the reports upon which the above figures are obtained are manifestly erroneous and incomplete. More butter and cheese than is reported is doubtless made on farms and even in cheese factories. It is not surprising that families making butter as an incidental part of their work, and selling a few pounds at a time when convenient, should be unable to give an account even approaching accuracy closely of the number of pounds sold. They are, as a rule, still less able to guess closely the number of pounds consumed by themselves.

The Hon. W. I. Chamberlain, secretary of the Ohio State Board of Agriculture, says, upon this point:

> Plainly it is not all reported, however, as the amount given would be only 16 pounds per annum to each inhabitant. This would not begin to equal even the home consumption. Probably that made for home use in families and by village people is not reported, nor all that in factories. Cheese, too, is not fully reported. For example, Summit County reports 1,599,747 pounds, whereas the single firm of S. Straight & Co., in that county, makes more than that amount. Our law-makers should enact some law to secure a more thorough reporting of statistics.

BEEF PRODUCTION.

Although considerable dairying is done in Ohio, yet in reply to the question, "Are cattle generally kept for beef?" the answers were almost uniformly that they were so kept. The probability is, however, that most of the cows, instead of being kept for the purpose of raising calves for beef, were generally kept to furnish a supply of milk for the family and for dairy purposes, and that the calves were weaned at an early age, and fed upon skimmed milk and other food, as is customary in all States where mixed farming is the general custom. Taking the State as a whole in 1880, 70 per cent. of the entire cattle supply were milch cows. In some of the counties the percentage reported as being kept for this purpose ranged from 20 to 30. In other counties it ranged from 50 to 95; most correspondents state that from 40 to 50 per cent. were thus kept. All of the cattle which pass their usefulness as milch cows are either sold to feeders to be matured, or fattened on the farm where they had been kept, the latter plan being the most common.

Very few cattle are taken to Ohio for feeding, many counties reporting that none are thus received. The northwestern counties report that a few are taken from Chicago, also from the middle counties of Indiana. The northeastern counties seem to import no cattle for fattening. The western counties get a few, usually from Chicago, Saint Louis, Cincinnati, and Indianapolis, or from adjoining counties in Indiana. Southwestern Ohio furnishes a small supply for the central part of the State, as do also Indiana and Kentucky. By far the greater part of the supply of cattle for fattening, however, appeared to be obtained in Chicago. Grade shorthorns are generally selected, where they can be obtained, for this purpose, but common cattle are taken in many cases. In Huron County a correspondent states that dairy cows are usually introduced for stall feeding, while Pickaway County shows a strong preference for shorthorn and for Hereford grade steers.

Young calves from districts east of Ohio have been taken to that State in considerable numbers, to be pastured for one or two years and then fattened for beef. At the same time thousands of calves born within the State are killed at an early age to supply the demand for veal, and to rid the farm or the dairy of them. This peculiarity of cattle business appears in other States where a ready market for milk exists. It may be accounted for on the ground that a calf will, if permitted to suck its dam at pleasure, consume a quantity of milk which would sell for more money, at the factory or to consumers in towns, than the calf would be worth at any time before it would be weaned, naturally, by its dam. Thus a calf allowed to suck for six weeks would use milk worth fully $9, assuming that the dam would yield 12 quarts of milk per day, worth 85 cents per 100 pounds, during the time of her fresh and full flow. If a calf should be permitted to take from a cow 10 quarts of milk per day for six months, and that milk could have been sold at 40 cents per 100 pounds, the calf would have used $15.52 worth

of milk. If it were allowed to suck throughout eight months, as it probably would be if it was a purely-bred calf of a beef breed, it would consume milk worth, at 40 cents per cental, fully $41.40. Other food might be, and usually is, substituted for milk, but not a few practical farmers are of the opinion that the raising of calves where milk can be readily sold for even as low a price as 40 cents per 100 pounds, does not pay for the food and the attendance required.

In the northwestern counties of Ohio the number of young calves killed for veal forms from 10 to 75 per cent. of the births in the several counties, prices ranging from $3 to $10 per head. In other parts of the northern half of the State the percentage slaughtered is from 5 to 50, the average being not far from 25 per cent. In a few counties no calves are thus disposed of. From some parts of Ohio calves are bought in considerable numbers for shipment to Chicago and other markets in the West. These young animals are taken to the farms of Illinois, Iowa, and Missouri, where they are pastured one or two years and then fattened. Although the percentage of loss among them is heavy, farmers in the States named continue to purchase. It is true that few farmers who have bought of them once repeat the operation without taking care to select animals that were some months old when shipped from their native place, and had attained an age that enabled them to stand the hardships of the journey to the West. In the Chicago market such calves sell at prices ranging from $6 to $17, or about the same as they would be worth for slaughter for veal in the districts where raised.

As is the custom in other States, farmers in Ohio buy store cattle in the spring months for grazing, and in autumn for full feeding. Most of such purchases are made between February and May, and between September and November, although in some counties purchases are made throughout the whole summer season at such times as happen to suit the convenience of the farmer. The business of fattening cattle is not carried on in a large way, but a great number of farmers manage to feed from 2 to 6 head each year, while but comparatively few feed more than 10 to 20 cattle each year. Cattle bought for grazing are, as far as possible, secured when one or perhaps two years old. Some three-year-old cattle are bought, however, and are matured at the age of four years.

No general rule is observed as to the time of beginning the process of fattening. Some commence in midwinter; many begin in the fall, and some in early summer, feeding heavily upon grass, that their cattle may have the benefit of succulent and laxative food with the heating and somewhat constipating grain. The number of farmers who follow the last-mentioned course appear, however, to be by no means large. Most of them seem to be of the opinion that feeding grain at a time when the stock have an abundance of other palatable and nutritious food is wasteful.

Cattle are sent to market at any and all times of the year, whenever they become fat enough to sell readily. The greater part of the supply is sold early in the spring, before the farm work of that season begins, but the movement continues quite actively until June. Some farmers carry their stock until July. In many, if not in most, instances cattle bought for grazing or for fattening stay at least a year on the farm of the feeder; but some feed heavily for six months and then sell. It is quite likely that most of the beeves are fully three years old when slaughtered. Old and disabled milch cows are found in the markets at all seasons. When no longer useful in the dairy they are quickly disposed of.

A very considerable percentage of the beeves grown or fed in the State are sold to the shipper or to the butcher when in the condition commonly called "grass fat." Such stock are fed upon rough forage during winter and turned upon pasture in spring. Little or no food is given them when upon pasture. In the course of the summer they become fleshy, if not fully fattened, and afford a reasonable quantity of beef at small cost. Almost the only items of outlay with which cattle thus treated can be fairly charged are interest upon the purchase price of the animals, interest upon the value of the land used for pasture, and the value of the rough forage consumed. As the average value of the farms of Ohio in 1880 was $46 per acre, including farm buildings and fences, it is safe to assume that the pastures are worth at least $30 per acre. At 7 per cent. per annum the interest on the value of the three acres of pasture, required to support a bullock throughout the season, would be $6.30; interest upon the purchase price of stockers of good quality may be estimated at $2.25, and it is quite likely that $10 will cover the value of the rough forage consumed through the winter, although this item will be found to vary greatly in different localities, and under different systems of management. At the figures mentioned the total cost of the grass-fat bullock will be not far from $50.55, a cost that will be repaid if the animal can be sold at 4 cents per pound, and averages 1,260 pounds in weight. Even if no more money could be obtained and no greater weight be made the transaction would not be altogether a losing one, since it would have served the purpose of converting into cash and manure a quantity of grass and of rough forage that would otherwise be sent from the farm to its final impoverishment.

Correspondents in the middle and the northern parts of Ohio have said that from 50 to 75 per cent. of the cattle are sent to market when grass fat. A few write that only 5 per cent. are thus sold from the districts in which the correspondents live, but that can be true of a very limited area only. In the northeastern counties the number thus sold equals from 25 to 50 per cent. of the entire surplus of beeves. In the western part of the State from 20 to 90 per cent. are sold in this condition, the central counties turn off from 25 to 60 per cent. when grass fat, while from the several southern counties from 33 to 87 per cent. of all the beeves marketed are those that have been managed as described above.

As a general rule the beeves sold by Ohio farmers are slaughtered at least a year earlier in their lives than were those of ten or fifteen years ago. The constant tendency has been to shorten the time of grazing and feeding, since it is becoming more and more generally recognized that time and interest upon the investment in cattle and in lands form important items in the cost of production. Fifteen years ago the age at which beeves were generally slaughtered ranged from four to six years, most of them being under five years old. Now the age is generally between two and four years, with most at three years. With some of the more progressive farmers fully one-half of the cattle they feed are sold when two years old. A gentleman writing from Lucas County expresses the belief that 50 per cent. of all the ripe beeves sold from that county are two-year-olds. Feeders in a few of the southern counties say that cattle are marketed no earlier now than they were ten or even twenty years ago.

The average gross weight of grass-fat bullocks when sold is between 1,000 and 1,300 pounds. Fully matured steers reach 1,500 to 1,800 pounds, but the greater number of the fat beeves average probably

about 1,450 pounds. Higher weights than the last mentioned are attained, as a rule, by high grade steers only.

The markets to which the surplus beeves of Ohio are sent are Buffalo, Pittsburgh, New York, and Baltimore. The southern counties send their cattle to Cincinnati, to Baltimore, and to New York, Baltimore being evidently a favorite market with shippers in the southeastern quarter of the State. Buffalo is the center to which a very large part of the stock of Northern Ohio is consigned. Cleveland and Cincinnati, enjoy a very large trade with local butchers within the State, and are also points to which many farmers go to obtain store stock. This is more especially true of Cincinnati, which has for many years been known as one of the principal live-stock markets of the United States.

COST OF PRODUCTION.

The rates of interest in Ohio are generally 7 and 8 per cent. In a few instances higher rates are exacted, and in more cases 6 per cent. is accepted, and even as low as 4 per cent., where the loan is secured by mortgage upon lands or cattle. At these rates the interest upon the average value of the farms of the State would range from $2.76 to $3.68 per acre per annum.

The average value of corn in Ohio in the latter part of the winter of 1884–'85 was given by correspondents in all parts of the State as ranging from 25 to 50 cents per bushel; on the farm where grown 35 to 40 cents per bushel having been the most generally quoted range. In several counties sales were made by the cental at 50 to 55 cents, equal to 28 to 31 cents per bushel of 56 pounds. In the northwestern part of the State cornstalks were valued at from $1 to $5 per acre, the price rising in one county to $8. Hay in that region sold on the farms where made at $5 to $12 per ton, the average having been about $10. Straw usually sold for prices ranging from $1 to $4 per ton, in one county reaching $5 per ton. It is estimated that the average value per ton of straw was $3. Pasturage was valued at from $1 to $3 per month; but it is quite likely that little pasturage was bought, except for family cows, in the immediate vicinity of towns and villages.

There is a wide diversity of opinion as to the quantity of hay, straw, or other fodder, and of corn or other grain which should be fed to animals fattening. In the northern part of the State a number of correspondents reported that the usual rations were 10 to 16 bushels of corn in the ear per month in fully fattening a steer. That would amount to from 60 to 100 bushels per bullock. Others thought that 8 bushels were enough. It is the practice of many to feed about one-half of a ton of hay per month to each fattening steer; others are of the opinion that 500 to 700 pounds are sufficient. Other practical feeders agree in stating that the rations most commonly used in their counties will average 8 bushels of corn, 700 pounds of hay, 125 pounds of oil-meal, and 100 pounds of bran, or the equivalent of the last two items. Upon such a ration as this they would expect to make a growth of 80 to 120 pounds per month per bullock. Still other feeders expect to make their cattle gain from 30 to 50 pounds per month upon an average of 15 to 18 bushels of corn and 800 pounds of hay, without other forage.

In response to the query, "What is the average increase in the weight of fattening cattle per month upon pasture alone?" the answers indicated that such increase would range from 30 to 50 pounds per bullock, and that the average increase of weight of fattening cattle for each bushel of corn fed to cattle upon pasture would be from 10 to 215 pounds,

although quite a number think that eight pounds per bushel would be a creditable average gain in weight, and that when cattle are not on pasture, but are fed dry hay with the grain, an increase of 2 to 3 pounds per bushel of corn fed would be quite close to the average.

Among foods other than those mentioned, which are the staple and by all means the greatest part of the supply used in Ohio as in other States west of the Alleghanies, beets are used to some extent, but oats, shorts, bran, wheat middlings, and other mill offal are most commonly mentioned. In many counties, however, corn is practically the only grain used for feeding cattle. This is especially true of the northern part of the State.

There is a wide difference of opinion as to the cost of maintenance of cattle in the northern part of Ohio. In fact it is difficult to so separate the several items of cost as to ascertain what each amounts to in the general practice of farmers. A few students of agriculture may have given such attention to the cost of feeding cattle in Ohio, as to be able to state what the cost of the several foods would be, but it is evident that few if any can tell what the actual expense is to farmers generally. Some farmers state that the cost of keeping a herd in winter would be about $22 per month for wages, $12 per month for maintenance of the men employed, and $15 per month for maintenance of horses employed in hauling food for the stock. Others place the cost of carrying cattle at 30 cents per head per month for wages, 25 cents per head per month for boarding the men, and 60 cents per head per month for the cost of teams. Still others estimate the outlay for those several items at 35 cents for wages, 30 cents for board of men, and 25 cents for keep of teams for each head of cattle in a herd of from 20 to 40 cattle. But little variation in the estimates of correspondents in the different parts of the State have appeared, beyond those shown above.

In summer the average cost of fattening was said by most correspondents to be less than half that of winter feeding. In all the northern part of Ohio cattle are generally housed in winter, but in the southern half of the State they are not so sheltered. In all parts of the State swine are permitted to run with cattle when fattening. Comparatively few people appear to be prepared to give an accurate statement as to the amount of growth hogs thus following cattle in the feed-lot would make under ordinary circumstances.

In those counties where full feeding of cattle in summer has been practiced, feeders seem to generally prefer summer feeding, giving as their reason for such preference the opinion that the advantages of summer feeding over winter feeding were equal to 20 to 25 per cent. of the cost. Some think that the difference is from 30 to 50 per cent. in favor of feeding on grass. One correspondent, who has evidently given the subject some thought, is of the opinion that in summer feeding the gain is in weight of beef and not in the price thereof; while in feeding in winter the gain is largely in the value per pound of the beef, and not so much in the weight. This view is doubtless based on the fact that store cattle are usually, if not invariably, lower in price in autumn and early winter than they are in spring. Thus a farmer who buys a steer in the fall at 3 cents per pound, and by moderate feeding through the winter adds even 100 pounds to its weight, will lose no money if he sells the steer in the spring at 4 cents per pound. At 3 cents per pound a steer of 800 pounds will cost $24; the cost of keeping through the winter, on hay and coarse forage, may be between $9 and $12, making the total cost from $33 to $36. A bullock weighing 900 pounds, and selling for 4 cents, will bring $36. It is quite likely that 200 pounds or

more will be added to the weight of the animal, even though the rations be rather scanty, making the selling value $40; but when a more liberal course is adopted the weight is increased to 1,200 or 1,300 pounds, and the steer sells for from $4.50 to $5 per cental alive, making $54 to $65 for the beast. This affords a reasonable profit, in addition to the manure left to enrich the farm.

In all the northern part of Ohio cattle are almost universally housed in winter, but in the southern part of the State a large number of cattle other than milch cows are not generally thus sheltered. As a rule swine follow fattening stock, but comparatively few people are prepared to answer the question, "What is the average growth of pork made for each bullock, where swine follow fattening cattle?"

In all parts of Ohio, stock generally receive their water supply from wells, springs, and clear, pure streams. A few are watered from tile drains, and in many counties all the sources of supply named are used. Comparatively few cases appear in which stock are compelled to depend upon sources which become stagnant for water to drink. Occasionally, however, such sources are used, particularly in the latter part of summer, when the flowing streams have been stopped by dry weather.

DISEASES.

With the exception of cases of so-called lump-jaw, or *actinomycosis*, the cattle of Ohio are apparently free from diseases of any kind that may be transmissible from one to another. In 1883, 22,849 cattle died of disease in that State. That was less than one-half of 1 per cent. of the total supply. Some cases of Texas fever occur nearly every year, but these are almost without exception confined to lots of cattle brought from the large live-stock markets to be grazed or fed, or to be held for a time awaiting slaughter. The ailments that cause a considerable part of the small loss reported are hoven, called murrain by some, and the effects of insufficient food and shelter. All reports agree that, with the exception of an outbreak of contagious pleuro-pneumonia in Miami County in 1884, which was fully reported by Dr. D. E. Salmon, Chief of the Bureau of Animal Industry, in the First Annual Report of that Bureau, there have been no epizootics among the cattle of Ohio.

Intense and almost universal interest in the subject of contagious diseases of cattle was aroused, in the year 1884, by accounts published by newspapers and otherwise, of the existence of contagious pleuro-pneumonia within that State, and of the serious danger which threatened the cattle industry of Ohio. One result of that agitation was the enactment by the Ohio legislature of a bill providing for the appointment of a commission whose duty it is to use all necessary measures for preventing the introduction of animals that may convey the germs of fatal contagious or infectious diseases, and for stamping out such diseases, whenever they may appear in that State. That commission was appointed on May 6, 1885, and is composed of the following members: Maj. B. W. Carlisle, president, Lancaster; Dr. T. P. Shields, secretary, Watkins; and Judge T. C. Jones, Delaware.

On September 4 this commission reported to the governor of Ohio that the live stock of the State were free from contagious pleuro-pneumonia, and in a generally healthy condition. Upon this the governor notified the governors of States which had established quarantine against Ohio, and requested the removal of the quarantine restrictions.

Respectfully submitted.

EDWARD W. PERRY.

CHICAGO, ILL., *December* 25, 1885.

SWINE AND FOWL INDUSTRY OF MISSOURI, AND ANNUAL LOSS BY DISEASE.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture:

SIR: In accordance with the instructions accompanying my appointment as an inspector of the Bureau of Animal Industry, I have the honor to herewith transmit you a special report, by counties, of the hog and fowl industry in the State of Missouri; and also an estimate of the number and value of hogs annually lost by hog cholera or swine plague, and of fowls lost by fowl cholera.

The collection of these facts has been attended with much difficulty, and in many counties the report is not as satisfactory as I would have been pleased to have it. I find it no easy task to get correspondents who will manifest sufficient interest in gratuitous work to give carefully prepared statements of their respective counties. Circular after circular was sent out, to which I received no reply, but by unremitted efforts I finally secured sufficient information to form the nucleus of this report, which, I think, you will find approximately near the correct figures.

HOGS.

The number of hogs and the average value per head, as shown in the following table, are perhaps much greater than will be shown by the assessment rolls, but it should be remembered that the whole number of hogs are never listed by county or township assessors, and that the assessed value is only from one-half to two-thirds of the real value. In the light of these facts, the estimates in this table, in these two instances, will be found rather below than above the true data.

The number of hogs produced is very much dependent upon the corn crop, and hence varies with the production of this cereal. Counties, the staple production of which is corn, will be found to have a proportionately large number of hogs, and in such counties the average price per head is greater. Take, for example, the corn growing counties along the Missouri River and compare them with many of the counties in the southeastern part of the State, and a marked difference is seen, both in the number of hogs produced and the average value per head.

HOG CHOLERA.

To get the number of hogs annually lost by hog cholera or swine plague was a slow and laborious task, and at best is only an estimate, there being no data from which to reckon. Parties to whom circulars were addressed would send in reports, which varied widely as to the

per cent. of loss. This, no doubt, is due to the locality in which the writer chanced to live. Writers in one part of a county would report considerable loss, whilst others in another part of the same county would report a comparatively insignificant loss. There was not, however, a county in the State which did not report more or less loss from cholera, and the rate per cent. of loss contained in the annexed table is a carefully calculated average of the losses reported.

It is a fact worthy of notice that the amount of loss from this source is less in those counties where the hogs run at large and subsist mainly upon the forest mast than in those where they are kept in inclosures and fed during the entire year.

Table showing the number of hogs raised in the State, the average value per head, the number attacked and the value of those lost by disease.

Counties.	Number produced.	Average value.	Total value.	Lost by disease.	Per cent. of loss.	Total amount of loss.
Adair	21,900	$3 00	$65,700	1,095	5	$3,285
Andrew	51,785	4 00	207,140	3,106	6	12,424
Atchison	65,000	3 00	195,000	9,750	15	29,250
Audrain	28,000	3 50	98,000	1,120	4	3,920
Barry	28,000	2 50	70,000	5,600	20	1,400
Barton	22,824	2 75	62,766	1,141	5	3,138
Bates	44,850	3 93	176,260	4,480	10	17,606
Benton	24,176	3 40	82,198	2,417	10	8,218
Bollinger	26,400	3 30	87,120	3,960	15	13,068
Boone	30,000	3 33	99,900	3,000	10	9,990
Buchanan	36,500	4 50	164,250	2,920	8	13,140
Butler	11,007	1 87	20,583	220	2	411
Caldwell	41,000	4 25	174,200	1,640	4	6,970
Callaway	31,315	3 75	117,431	2,192	7	8,220
Camden	17,439	2 25	39,237	1,046	6	2,353
Cape Girardeau	28,349	2 50	70,972	850	3	2,125
Carroll	51,007	3 40	173,423	5,101	10	17,343
Carter	5,600	2 80	15,680	448	8	1,254
Cass	48,450	3 95	191,377	5,814	12	22,965
Cedar	24,980	2 00	49,960	3,747	15	7,494
Chariton	43,160	3 00	129,480	4,316	10	12,948
Christian	23,000	1 75	40,250	2,300	10	4,025
Clarke	15,300	3 00	50,490	459	3	1,515
Clay	46,360	3 25	150,670	927	2	3,013
Clinton	47,500	3 52	167,200	2,850	6	10,032
Cole	15,400	2 25	34,650	616	4	1,386
Cooper	34,800	3 90	135,720	2,784	8	10,858
Crawford	19,200	1 60	30,720	576	3	922
Dade	28,850	3 50	100,975	2,019	7	7,066
Dallas	20,000	2 56	51,200	400	2	10,240
Daviess	37,480	3 10	116,188	749	2	2,322
De Kalb	29,270	4 25	124,647	2,049	7	8,708
Dent	16,100	2 00	32,200	805	5	1,610
Douglas	18,420	2 00	36,840	921	5	1,842
Dunklin	21,603	2 41	52,063	3,456	16	8,328
Franklin	41,250	3 00	123,750	6,187	15	18,561
Gasconade	16,208	1 60	25,933	486	3	778
Gentry	32,780	3 10	101,618	656	2	2,034
Greene	34,584	2 90	99,294	2,787	8	8,082
Grundy	19,254	3 35	64,501	770	4	2,579
Harrison	36,744	3 15	115,744	4,409	12	13,888
Henry	40,890	4 00	163,560	2,044	5	8,176
Hickory	16,780	2 90	48,662	1,342	8	3,892
Holt	38,076	4 00	152,304	1,904	5	7,616
Howard	24,869	3 30	82,068	995	4	3,283
Howell	23,767	2 00	47,534	713	3	1,425
Iron	6,678	2 50	16,695	667	10	1,667
Jackson	43,220	4 25	183,685	3,458	8	14,696
Jasper	29,650	3 85	114,152	1,779	6	6,849
Jefferson	22,460	2 85	64,011	3,369	15	10,601
Johnson	46,577	4 00	186,308	4,657	10	18,628
Knox	23,820	3 00	71,460	1,191	5	3,573
Laclede	19,284	2 50	48,210	964	5	1,928
La Fayette	49,850	3 50	174,475	3,489	7	12,212
Lawrence	28,859	2 70	80,619	2,090	7	5,643
Lewis	26,860	3 30	88,638	1,343	5	4,432
Lincoln	21,876	3 50	76,566	3,281	15	11,483
Linn	26,530	3 51	93,120	1,061	4	3,724

Table showing the number of hogs raised in the State, &c.—Continued.

Counties.	Number produced.	Average value.	Total value.	Lost by disease.	Per cent. of loss.	Total amount of loss.
Livingston	34,860	$3 70	$128,982	1,045	3	$3,867
McDonald	19,720	2 10	41,412	986	5	2,071
Macon	35,000	3 50	122,500	1,050	3	3,675
Madison	10,940	2 65	28,811	438	4	1,161
Maries	16,545	1 50	24,817	1,654	10	2,481
Marion	23,941	4 00	94,764	718	3	2,872
Mercer	20,000	3 00	60,000	1,000	5	3,000
Miller	19,000	2 30	43,700	950	5	2,185
Mississippi	7,624	2 40	18,298	229	3	550
Moniteau	25,430	3 65	92,819	1,834	8	6,694
Monroe	28,946	3 70	107,100	2,026	7	7,496
Montgomery	20,470	3 95	76,762	1,228	6	4,605
Morgan	17,220	2 85	49,077	861	5	2,454
New Madrid	12,000	2 80	33,600	1,200	10	3,360
Newton	20,000	3 50	70,000	400	2	1,400
Nodaway	90,000	3 65	328,500	7,200	8	26,280
Oregon	13,275	2 50	33,187	796	6	1,990
Osage	20,800	3 00	62,400	416	2	1,248
Ozark	12,531	2 25	28,195	626	5	1,406
Pemiscot	7,130	3 40	24,242	713	10	2,424
Perry	21,015	2 65	55,680	1,471	7	3,898
Pettis	29,683	4 15	123,084	2,968	10	12,317
Phelps	16,534	2 10	34,721	992	6	2,083
Pike	24,076	3 70	89,081	1,685	7	6,234
Platte	37,000	3 50	129,500	1,480	4	5,180
Polk	25,000	3 00	75,000	5,000	20	15,000
Pulaski	15,027	2 55	38,319	601	4	1,533
Putnam	19,260	2 70	52,002	1,541	8	4,161
Ralls	17,889	3 80	67,978	3,220	18	12,236
Randolph	20,716	3 35	69,399	2,071	10	6,938
Ray	48,573	3 40	165,149	4,857	10	16,514
Reynolds	11,785	2 90	34,176	1,414	12	4,101
Ripley	13,164	2 10	17,644	1,185	9	2,388
Saint Charles	24,200	4 15	100,430	2,420	10	10,043
Saint Clair	17,130	3 80	65,094	1,713	10	6,509
Sainte Francois	8,592	2 10	17,043	1,031	12	2,165
Ste. Genevieve	15,629	2 05	32,039	1,953	12½	3,914
Saint Louis (county)	20,372	4 50	91,674	1,630	8	7,335
Saline	53,826	4 20	225,079	4,844	9	20,345
Schuyler	10,859	3 50	37,996	1,628	15	5,698
Scotland	20,307	3 00	60,921	802	4	2,406
Scott	19,638	2 40	47,131	785	4	1,884
Shannon	8,945	2 30	20,573	537	6	1,235
Shelby	25,380	3 80	96,444	1,777	7	4,950
Stoddard	28,448	2 00	56,896	5,689	20	11,378
Stone	10,470	2 70	27,269	628	6	1,686
Sullivan	24,246	3 75	90,922	1,940	8	7,275
Taney	13,000	2 40	31,200	650	5	1,560
Texas	20,246	2 00	40,492	1,215	6	2,430
Vernon	42,760	3 50	149,660	1,283	3	4,490
Warren	20,000	3 00	60,000	2,000	10	6,000
Washington	14,740	2 50	36,850	1,769	12	4,422
Wayne	13,540	2 45	33,173	1,354	10	3,317
Webster	22,413	2 31	51,774	2,017	9	4,659
Worth	16,741	3 60	60,268	1,172	7	4,215
Wright	21,320	2 35	50,102	1,279	6	3,006
Total	2,852,847	.....	9,521,326	228,487	.....	729,889

FOWLS.

The fowl industry of Missouri is likely not so extensive as in many of the Eastern States, but is making material progress at this time. Within the last few years large purchases of fowls of all kinds have been made along the lines of the different railroads, for the purpose of supplying the New York and other eastern markets. The prices paid by these shippers are good, and considerably above those formerly paid by local buyers. Where these shippers have been doing their buying, for the last two years, farmers have been stimulated by the prices paid to give more attention to this much neglected industry, and, as a consequence, more and a better grade of fowls will be produced.

To ascertain the exact status of the fowl industry would, under existing circumstances, be a very difficult task. It is a species of property

which is never listed by assessors, and very few farmers can give an accurate statement of the number and value of the fowls produced upon their farms for any given year. The estimate, given in the accompanying table, may appear to some to be rather extravagant, but upon investigation will be found very reasonable, in fact rather low. The home consumption is very great, and must be considered as a part of the production. Many families during the summer and fall months use chickens and other fowls entirely, instead of other meats, in fact nearly all the poorer class do this. It would be safe to say that more than half the annual production is consumed at home by the producer.

The prices of fowls vary widely in the different counties, owing to the market facilities. In counties having railroads, populous towns, and a large element of non-producers, the prices are good, whilst in many other sections of the State, not having these advantages, the prices are low and the number produced limited. In such counties the number produced is measured by the home demand. The average price each, given in this table, is not intended for chickens alone, but for all kinds of poultry, and is probably a little lower than it should be. I am inclined to think that many of the correspondents reporting to this office labored under the impression that the inquiry related to chickens solely, and made their estimate accordingly.

CHICKEN CHOLERA.

Vast destruction has been done to the poultry interest of this State by this disease. There is hardly a neighborhood that has not suffered more or less from its ravages. In many localities more than half the production is thus lost. Many correspondents reported as high as 50 per cent. loss in their immediate vicinities. The per cent. of loss given in the table is an average of reports received, and is perhaps as near correct as can be obtained.

Table showing the number of fowls raised in the State, the average value per head, the number and value of those lost by disease.

Counties.	Number produced.	Average value.	Total value.	Lost by disease.	Per cent. of loss.	Total value of losses.
		Cents.				
Adair	65,000	20	$13,000	6,500	10	$1,300
Andrew	207,140	16	33,142	16,571	8	2,651
Atchison	198,000	15	29,700	23,760	12	3,564
Audrain	70,000	21	14,700	4,200	6	882
Barry	112,000	16	17,920	16,800	15	2,688
Barton	79,885	16	12,781	7,990	10	1,278
Bates	201,825	18	36,328	16,148	8	2,806
Benton	94,704	14	13,259	7,576	8	1,061
Bollinger	105,600	10	10,560	15,840	15	1,584
Boone	100,000	22	22,000	10,000	10	2,200
Buchanan	146,000	20	29,200	14,600	10	2,920
Butler	55,630	12½	6,954	5,560	10	695
Caldwell	164,000	17	27,880	14,760	9	2,509
Callaway	125,260	16	20,041	12,526	10	2,014
Camden	52,317	12	7,278	4,185	8	502
Cape Girardeau	96,000	12½	12,000	2,880	3	345
Carroll	204,028	17	34,685	16,322	8	2,775
Carter	22,400	12	2,688	672	3	81
Cass	193,800	18	34,884	19,380	10	3,488
Cedar	87,430	15	13,114	6,120	7	918
Chariton	172,640	15	25,896	6,905	4	1,036
Christian	80,500	14	11,270	6,440	8	902
Clarke	64,500	12½	8,062	3,870	6	479
Clay	193,000	18	34,840	9,650	5	1,737
Clinton	190,000	16	30,400	11,400	6	1,824
Cole	77,000	18	13,860	3,850	5	693
Cooper	149,200	18	26,856	14,920	10	2,686
Crawford	76,800	13	9,984	3,072	4	399
Dade	115,400	14	16,156	11,540	10	1,616
Dallas	60,000	10	6,000	15,000	25	1,500
Daviess	149,920	14	20,989	29,984	20	4,198
De Kalb	117,080	17	19,904	7,025	6	1,194
Dent	64,400	14	9,016	3,864	6	541

Table showing the number of fowls raised in the State, &c.—Continued.

Counties.	Number produced.	Average value.	Total value.	Lost by disease.	Per cent. of loss.	Total value of losses.
		Cents.				
Douglas	73,680	12	$8,842	2,947	4	$354
Dunklin	64,809	10	6,481	12,962	20	1,296
Franklin	165,000	18	29,700	16,500	10	2,970
Gasconade	81,040	18	44,587	5,672	7	1,021
Gentry	131,120	15	19,668	9,178	7	1,376
Greene	138,336	17	22,517	13,833	10	2,352
Grundy	77,016	15	11,552	3,851	5	578
Harrison	198,000	15	29,700	19,800	10	2,970
Henry	163,560	17	27,805	11,449	7	2,780
Hickory	67,120	12	8,054	3,356	5	403
Holt	152,304	20	30,460	4,569	3	914
Howard	99,476	17	16,905	9,947	10	1,691
Howell	83,301	14	11,645	20,796	25	2,911
Iron	20,034	15	3,005	4,007	20	601
Jackson	216,100	22	47,542	21,610	10	4,754
Jasper	148,250	20	29,650	13,342	9	2,668
Jefferson	112,300	20	22,460	8,984	8	1,797
Johnson	187,308	18	33,704	18,730	10	3,371
Knox	96,000	15	14,400	9,600	10	1,440
Laclede	77,136	15	11,570	6,171	8	926
La Fayette	199,400	17	33,998	3,988	2	678
Lawrence	119,436	14	16,721	11,943	10	1,672
Lewis	94,010	14	13,161	9,401	10	1,316
Lincoln	109,380	22	24,064	21,876	20	4,813
Linn	106,120	15	15,918	7,428	7	1,114
Livingston	139,440	17	23,705	11,155	8	1,896
McDonald	78,880	12	9,466	4,733	6	615
Macon	100,000	12½	17,000	15,000	15	2,550
Madison	43,760	12½	5,470	2,188	5	273
Maries	66,180	15	9,927	7,941	12	1,191
Marion	90,000	18	16,200	10,800	12	2,944
Mercer	60,000	10	6,000	7,500	12½	750
Miller	76,000	13	9,880	6,080	8	790
Mississippi	30,496	13	3,964	1,220	4	159
Moniteau	101,720	16	16,275	9,155	9	1,465
Monroe	115,784	17	19,683	11,578	10	1,968
Montgomery	81,880	16	13,091	6,550	8	1,048
Morgan	68,880	14	9,643	4,822	7	675
New Madrid	48,000	12½	6,000	3,840	8	480
Newton	108,000	12	12,960	10,800	10	1,296
Nodaway	260,000	17	44,200	26,000	10	4,420
Oregon	53,100	12½	6,637	2,124	4	265
Osage	88,700	20	17,740	13,305	15	2,661
Ozark	60,000	12½	7,500	4,800	8	600
Pemiscot	40,000	15	6,000	5,000	12½	750
Perry	63,045	13	9,560	6,304	10	819
Pettis	148,415	22	32,651	11,873	8	2,612
Phelps	66,136	15	9,920	2,645	4	397
Pike	108,342	20	21,668	9,630	10	1,926
Platte	166,500	18	29,970	24,975	15	4,494
Polk	110,000	11	12,100	22,000	20	2,420
Pulaski	60,108	15	9,016	1,803	3	270
Putnam	77,040	15	11,566	5,393	7	809
Ralls	75,000	16	12,000	7,500	10	1,200
Randolph	82,864	18	14,915	6,629	8	1,183
Ray	194,282	16	31,085	29,142	15	4,663
Reynolds	47,140	18	8,485	943	2	169
Ripley	43,000	11	4,730	2,150	5	236
Saint Charles	121,000	22	26,620	7,260	6	1,597
Saint Clair	68,520	15	10,278	5,162	8	774
Saint Francois	42,960	12	5,155	3,437	8	412
Sainte Genevieve	62,516	12½	7,814	6,251	10	781
Saint Louis (county)	142,604	22	31,373	9,982	7	2,196
Saline	168,750	20	33,750	16,875	10	3,375
Schuyler	54,295	12½	6,787	4,343	8	521
Scotland	81,228	13	10,559	4,061	5	528
Scott	78,552	13	10,212	2,357	3	306
Shannon	35,780	12	4,294	1,431	4	172
Shelby	101,520	16	16,243	10,152	10	1,624
Stoddard	113,792	12½	14,224	22,758	20	2,845
Stone	41,880	12	5,020	1,675	4	211
Sullivan	96,984	15	14,548	9,698	10	1,455
Taney	78,000	10	7,800	11,700	15	1,170
Texas	80,984	11	8,908	8,098	10	891
Vernon	171,040	15	25,656	8,552	5	1,283
Warren	84,600	14	11,844	7,614	9	1,066
Washington	58,960	20	11,792	5,896	10	1,179
Wayne	54,160	11	5,958	4,874	9	536
Webster	49,652	13	6,455	3,972	8	516
Worth	66,964	16	10,714	5,356	8	857
Wright	85,280	12	9,234	8,528	10	1,023
Total	11,664,408		1,918,701	1,087,460		175,144

TEXAS FEVER.

In addition to the report of the hog and fowl industry, I was required to give in this special report of the State of Missouri an estimate of the number and value of cattle lost by what is known as splenic or Texas fever. A few counties in the southern part of the State report a slight loss from this disease, but it was so small that it would be useless to give it in a table by counties. The losses reported have been chiefly confined to counties through which a railroad leading from the ranch district of Texas passed.

There are now but few Texas cattle kept or fed in this State. Several years ago large droves were driven into Missouri to be stall fed, and it was at this time that our native cattle suffered largely. What few Texas cattle have been fed here for the past few years were brought in at a season of the year when there was little or no danger of communicating the disease. The greatest loss from this source will, perhaps, be found among stock cattle bought by feeders from stock-yards wherein Texans have been kept. On the whole, the loss within the last few years has been very trifling as compared with that of former years.

Respectfully submitted.

J. N. BRADLEY,
Inspector Bureau of Animal Industry.

PAPINVILLE, MO., *September* 1, 1885.

CATTLE INTERESTS WEST OF THE MISSISSIPPI.

Hon. NORMAN J. COLEMAN,
Commissioner of Agriculture:

SIR: I have the honor to submit a report of the cattle industry for the States and Territories west of the Mississippi River. This may be said to be the beef-producing area of the United States. The last decade has witnessed a marked change in the cattle industry of this section both as to number and grade. The range and ranche cattle business of the West has grown to enormous proportions, thus furnishing a fair quality of beef at reasonable rates. What twenty years ago was an enterprise in embryo is to-day a colossal affair representing millions of capital.

My first design was to give a tabulated report by counties, but this was rendered impracticable, owing to the fact that it was impossible, even with the most diligent efforts, to secure sufficient data from many of the counties contained in the twenty-one States and Territories embraced in the district west of the Mississippi to make such a report. Communications were directed to leading stockmen in each of the 1,139 counties included in these States and Territories, but from many no reports were received. Enough, however, were obtained to form a good basis for calculations and estimates by States, which system, as a last resort, I have adopted.

The stockmen of the Western ranches seem quite reticent about communicating any information as to the extent and value of their cattle interest.

The accompanying table is approximately correct as to the number and value of cattle, the grazing area, &c.

I will state by way of explanation that the grazing area as indicated herein includes all lands not actually in cultivation, and no doubt embraces a large per cent. of territory which is even unfit for grazing purposes.

As to the number of cattle devoted to dairy purposes the figures in this table will seem exorbitant, but in these estimates I have included not only those devoted to actual dairy purposes, but also the milch cows kept for family use. The dairy industry of the West is in its infancy, and but a small per cent. of the number indicated in this table are devoted to the dairy business exclusively. The profits of this branch of the animal industry are beginning to be realized and appreciated by our

farmers and stockmen, and a more extensive business in this line is in store for the near future:

States and Territories.	Number of cattle.	Number of acres devoted to grazing.	Number of cattle devoted to dairy purposes.	Annual consumption.	Value of the cattle trade.	Cost of transportation to Chicago, per head.	Cost of transportation to Saint Louis, per head.	Cost of transportation to Kansas City, per head.
Arizona	188,973	68,655,460	15,118	14,680	$5,395,912	.....	.....	$7 85
Arkansas	879,069	20,369,280	263,372	146,804	17,581,380	.....	$4 50	.....
California	797,410	69,879,040	326,938	188,920	23,942,300	.....	.....	.....
Colorado	1,224,310	55,382,880	60,450	73,400	38,542,800	$8 25	.....	5 35
Dakota	324,720	94,528,000	108,240	36,529	10,166,320	5 60	.....	.....
Idaho	217,035	49,629,952	6,511	14,650	6,076,980	7 80	.....	.....
Indian T	223,800	39,960,000	40,000	.....	4,176,000	5 10	4 20	3 50
Iowa	2,050,261	10,651,200	683,421	293,610	65,326,000	3 45	.....	.....
Kansas	1,959,058	28,235,520	560,904	183,427	56,829,558	4 80	3 75	1 55
Louisiana	588,252	19,766,784	235,300	165,158	14,706,300	.....	.....	.....
Minnesota	444,720	32,949,280	158,055	134,532	12,796,880	.....	.....	.....
Missouri	1,733,486	15,396,640	544,523	397,010	58,938,524	2 40	1 75	1 66
Montana	883,269	83,698,560	30,131	19,335	26,498,070	7 20	.....	.....
Nebraska	1,387,400	34,618,464	277,240	67,320	44,396,800	4 45	3 40	.....
Nevada	226,500	67,424,256	18,875	22,875	5,889,000	.....	.....	.....
New Mexico	706,840	75,239,424	48,903	44,041	17,671,000	.....	.....	6 10
Oregon	580,300	45,387,800	96,720	36,702	17,409,000	.....	.....	.....
Texas	7,384,700	117,505,920	629,246	342,545	129,231,250	5 90	4 80	.....
Utah	143,124	48,919,488	64,405	49,040	4,607,472	12 00	.....	.....
Washington	235,000	37,666,816	47,000	19,575	20,680,000	12 40	.....	.....
Wyoming	1,235,700	60,564,560	13,730	14,680	37,071,000	11 25	.....	.....

BREEDS MOST IN USE.

For beef cattle almost three-fourths of the correspondents to this Bureau recommend the shorthorns as the one best adapted to that purpose. Coming from the cattle-breeders, as this does, it is a strong indorsement of that breed. Throughout the whole district the breeders are crossing the common cattle with shorthorns, and all speak of the very best results. A few, however, advocate the claims of the Holstein, Hereford, and Polled Angus, but these indorsements are few as compared with those of the shorthorns. To make a long matter short, the shorthorns and their grades seem to be the best adapted and by far the most popular as beef producers.

Arkansas and Louisiana are two States that do not pay much attention to the cattle traffic, and the reports state that as a general thing only native cattle are raised, with, of course, now and then, a few exceptional herds of blooded animals. What has been said of the shorthorns as beef producers, may with equal propriety be said of the Jerseys as a dairy breed, although many speak in the highest terms of the Alderney, grade shorthorns, and grade Holsteins.

The dairy business of the West is not sufficiently developed for any great degree of attention to be paid to the breeding of cattle with this single purpose in view, hence many farmers and stock-raisers suggest crosses of the native stock with Holsteins, Herefords, and shorthorns.

ANNUAL CONSUMPTION.

As to the number of cattle annually consumed in each State and Territory, the figures in the accompanying table are estimates, which approximate the actual number. To give these figures exact would be a long

and difficult task. It will be noticed from the table that the consumption of beef in the ranch district is greater, considering the difference in population, than in the States. This is due to the fact that they raise and use but little pork, and thus use beef almost exclusively.

AGE AT WHICH MARKETED.

The age at which our cattle are marketed is dependent largely upon the breed in use and the cost of raising. In Texas, Colorado, and in fact in all the ranch district, where the cost of keeping is light and the inferior breeds are in use, the cattle marketed for beef, at least those shipped to the centers of trade, are usually kept until four or even five years old. This is also true of Arkansas and Louisiana. In Missouri, Kansas, Iowa, and other places where there are a large per cent. of graded cattle, and where a great many of the beeves are stall fed, they are frequently marketed at two years of age, and generally at from three to four. Where they have to be fed for a long period during the year, it is more profitable to crowd them as much as possible, and thus fit them for market at an early age. Those used for supplying the home or local market are of various ages, generally speaking heifers and old cows.

METHODS OF TRANSPORTATION AND SUGGESTED IMPROVEMENTS.

The question of transportation is one which has been considered by every stockman. Cheap, quick, and safe transportation is what is wanted. The greater portion of beeves are transported by rail, and many suggestions as to improvements have been made by shippers, all of which would entail a greater or less expense upon railroad companies, thereby rendering any such improvements of slow introduction. Some suggest what they term a palace stock-car, having a separate apartment for each animal, and arrangements in the car for feeding and watering without unloading. Such cars would curtail the loss to shippers very much, and at the same time the cattle upon arrival at the markets would be in better condition to make good beeves. With the present ordinary stock-car, all the profits on a car-load of animals are not unfrequently taken up with losses occasioned by the dead, crippled, and maimed ones.

Shrinkage is another source of considerable loss to shippers, and this could be reduced very much by a more rapid transit.

In Wyoming and elsewhere in the West arrangements have been made to slaughter the animals at suitable points and ship the dressed beef instead of the live animal. Several of these slaughter-houses are in successful operation, and should such a thing become general much loss in the way of shrinkage, extra freight, and expense of hands to accompany cattle to market will be saved.

COST OF FEEDING.

The cost of raising and feeding cattle until marketable as beeves varies a great deal in the different States and even in different localities of the same State, depending as it does upon the advantages afforded in the way of grazing and cost of producing grain. In the ranch district the cost will range from $7 to $12 per head. Texas grazing being the least expensive, a grass fatted beef will cost the raisers about $7, whilst the same aged one in Colorado will cost about $8.40.

In the States where stall and winter feeding is done the cost is very much greater, an average estimate being for a three year old steer

from $25 to $30. Then to find the actual cost of the steer when ready for the market, it will be necessary to add the expense of stall feeding, and this is variously estimated at from 5 to 7 cents per pound for the number of pounds increase from the time feeding begins. On an average, by good feeding, the increase will be from 250 to 275 pounds, or an average of, say 265 pounds, which, at 6 cents per pound, makes an outlay of $15.90 for stall feeding. This added to the cost of raising will make a corn-fed beef animal cost from $41 to $46.

CONDITION OF CATTLE AT THE VARIOUS SEASONS OF THE YEAR, THE MODES OF SHELTERING AND PROTECTING THEM, AND LOSSES FROM EXPOSURE.

The condition of cattle during the summer and fall months is good in almost every locality where raised. The latter part of winter and early spring, however, frequently finds them in a very different and opposite condition, due mainly to the want of proper shelter and the lack of a sufficient quantity of nutritious food. Farmers and stock-raisers of the West are entirely too careless about the manner in which they provide stock shelters. If any at all are provided they are of the very poorest class. As a general thing the cattle of the West, with the exception of a few blooded animals, are left to care for themselves in respect to shelter, and can, during the winter season, be found hovering around some straw-stack, side-hill, or skirt of timber. The loss, however, occasioned from this source is very much lighter than one would expect. In Missouri, Iowa, Minnesota, Nebraska, Kansas, and Arkansas the average is from 1 to 2 per cent. In the States and Territories where but little or no winter feed is used the per cent. of loss is greater, being in the ranch district from 2 to 7 per cent. The ranchmen calculate to lose about 3 to 5 per cent. from exposure, and consider it less expensive than providing shelter and winter food.

DISEASES.

For the present year I have no reports of any great losses from diseases of any kind, either contagious or otherwise. In this respect the cattlemen have been more fortunate this year than last. The slight losses reported have been chiefly from Texas fever, murrain, and blackleg. In several localities in Minnesota, Iowa, Kansas, Nebraska, and Missouri considerable loss among young cattle was reported from blackleg; but in no locality was this loss estimated at over 2 per cent., and about the same loss in parts of the ranch district from other diseases. Taking an average of the whole country, the loss from disease among cattle may be said to be very light. Missouri cattlemen were very much excited last spring over the outbreak of pleuro-pneumonia among a herd at Fulton, Callaway County, but fortunately by prompt action upon the part of both State and Government officials, the actual loss was very insignificant.

TEXAS FEVER.

The disease among cattle commonly known as Texas or splenic fever has been so thoroughly discussed and investigated that it is hardly possible to add or suggest any new ideas on the subject. From the best information Texas produces for sale nearly 1,000,000 head of cattle which are either shipped direct to market or driven to the northwestern ranches, about two-thirds of this number being driven to the ranches. As a

breeding ground Texas is far superior to any section of the Union, and as a consequence can produce young cattle, and even beef cattle, for much less money than the ranches of other States and Territories. This fact, it is claimed by the Texas cattlemen, creates a greater opposition to the shipment of cattle north and northwest than the damage resulting from Texas fever. Whether these men are correct remains a disputed question. From various sections the reports of correspondents indicate losses ranging from 1 to 5 per cent. occasioned from this disease, whilst in many others they ridicule the idea of such a thing, as will be seen in the following report from an Iowa correspondent, who, in reply to the question as to the number and value of losses from Texas fever and other diseases, says:

> Cattle disease in the northwest is a humbug and a myth, existing only in the minds of veterinary surgeons, and some office-seekers and office-holders, who wish to feed at the public crib.

Our correspondent is, no doubt, a little radical in his ideas on the subject, but at the same time it is nevertheless true that from newspaper and other reports the facts about the ravages of this and other diseases are very much exaggerated. It is a clearly demonstrated fact that these cattle, when driven or shipped north, do communicate disease, occasioning losses in many localities, as above mentioned. As the surest and best preventive against these ravages, numerous reports suggest quarantine from April 1 to November 1, and it is quite probable that this, together with due diligence exercised in cleaning cars and stockyards where Texas cattle have been, will assist materially in reducing the number lost.

It may be well to say that, from the many communications received at this office, the loss from Texas fever has been light this year as compared with former years. For this difference two reasons might be assigned: First, several of the States and Territories have passed very stringent quarantine laws, and, second, the western and northwestern ranches have all been pretty well stocked, and hence there have not been so many Texas cattle brought in contact with the natives as was the case in other years.

Respectfully submitted.

J. N. BRADLEY,
Inspector Bureau of Animal Industry.

PAPINVILLE, MO., *October* 15, 1885.

CONDITION OF THE LIVE-STOCK INDUSTRY WEST OF THE MISSISSIPPI.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture:

SIR: I have the honor to submit herewith the following report of work done by me as inspector of the Bureau of Animal Industry. Inasmuch as my instructions were to obtain certain information relative to the cattle interests in the States of Iowa, Mississippi, Arkansas, Kansas, Nebraska, and Colorado, and the Territory of Wyoming, through the use of numerous correspondents, for which purpose blanks were furnished by the Department, I proceeded to send out said blanks to postmasters, county officials, officers of live-stock associations, secretaries of State boards of agriculture, and private individuals, for the general and specific information desired, and while many of these blanks have not been returned at all, and yet many others that were returned bring with them only partial replies to the questions propounded, my efforts in this direction have not been altogether fruitless.

Without attempting to enlarge upon the general subject of stock-raising, range herding, and beef production, so ably discussed in reports published in the First Annual Report of the Bureau of Animal Industry, I shall proceed at once to give such information as I have been able to gather in the most concise form possible. To this end I invite attention first to the following table:

Table showing number of cattle in the States and Territory named, extent of territory devoted to pasturage, number of dairy cows, estimated value of the cattle trade, losses by Southern cattle fever, &c.

Name of State.	Number of cattle.	Extent of territory devoted to pasture.	Number of cows devoted to dairy.	Estimated value of the cattle trade.	Annual loss by Texas fever.
Kansas	1,813,429	32,542,865	539,818	$45,335,725	$500,000
Iowa	2,312,442	13,272,534	1,029,006	57,811,050	.....
Mississippi	449,382	22,634,880	.....	4,493,280	.....
Arkansas	514,500	22,271,146	.....	5,145,000	.....
Nebraska	2,153,703	15,882,692	.....	53,842,575	.....
Colorado	931,680	67,000,000	.....	25,155,360	100,000
Wyoming	1,500,000	60,000,000	.....	45,000,000	.....
Total	9,875,082	233,604,117	1,568,824	236,783,990	600,000

KANSAS.

The breed of cattle most in use in this State is the shorthorn crossed with the Texan and native cows. As dairy animals the Jersey is given the preference; next come the shorthorns, and then the Holsteins,

Devons, and Herefords in the order named. Ninety-three correspondents give the annual rate of increase from 10 to 95 per cent. For the production of beef shorthorns take the lead; then follows the Hereford breed, the Polled-Angus, and the Galloway. They are marketed at from two and one-half to three and one-half years of age. When sold at two and one-half years of age they are usually purchased from ranchmen by parties who ripen them on corn and sell them at the age of three and one-half years. The animals are generally transported in common cattle cars to market. The cost of transportation is as follows: To Kansas City, $2.50; Saint Louis, $3.50; Chicago, $4.50. It costs to raise a steer on grass and forage from $2 to $8 per annum; to grain feed, from $35 to $45. The condition of cattle on ranches is generally good from the first of June to the first of January. If well fed and cared for they are usually in good flesh in the spring, but if not they are very poor. On farms they are protected in the winter season by barns and sheds, but on ranches they have but little shelter or protection of any kind. When sheltered and well cared for the loss is usually about 5 per cent. Last winter, where the stock was greatly exposed, the losses were 25 per cent. In some instances the losses exceeded 50 per cent.

There should be lower rates for transportation and better cars, better facilities, and more frequent stoppages for feed and water, and better time made by cattle trains.

As to the various diseases to which animals are liable in this State, fifty-six correspondents mention black-leg; seventeen, murrain; fourteen, caused by smut in corn-fields; nine, Texas fever; six, poison from loco; six, mange; three, black tongue; three, hollow-horn; one, lung fever; one kidney disease, and one, ophthalmy.

Many thousand cattle are brought into this State from Texas, which frequently cause heavy losses by southern cattle fever.

IOWA.

Cattle fed for market in this State are mostly grade shorthorns. The most acceptable breeds for the dairy are Holsteins, Jerseys, shorthorns, and natives, in the order in which they are named. Correspondents give the annual rate of increase of cattle in the State at from 10 to 30 per cent. The breed best adapted to beef production is grade shorthorns. The animals are marketed at from two and one-half to four years of age. They are generally shipped to market centers by rail in ordinary stock cars. The cost of transportation to Chicago is from $1.50 to $5 per head. In this cost is generally included that for feed, yardage, and commission at point of destination. The condition of animals from May 1 to January 1 is generally very good. From January to May they are thin in flesh unless well sheltered, fed, and watered. The average loss for want of shelter and proper attention is about 2 per cent. Great impovement could be made in the facilities for transportation of stock by railroads. Lower rates should be charged, and larger and better cars and faster time for stock trains should be afforded. Cattle are affected with but few diseases in this State. A few cases of "murrain" and black-leg, and an occasional outbreak of southern cattle fever, are about all that are mentioned. The losses from disease will not exceed 1 per cent.

MISSISSIPPI.

There are but few imported animals in this State, and the cattle bred and fed for the market are almost entirely of the common native stock. But very little attention is paid to dairy interests. Where any atten-

tion is given to this subject the animals preferred are Jerseys, Holsteins, shorthorns and their various crosses. The annual increase of animals, both for beef and dairy purposes, is small. The few animals raised for beef are of the common native stock, and they are sent to market at from one to four years of age. During the past three years a large number of young cattle have been shipped to western ranges. The markets are Mobile, Memphis, and New Orleans, and the cattle are shipped by both boat and rail. The cost of transportation is from $1 to $5 per head. No grain is fed, and the only cost is about $1 per head per annum for looking after and caring for the animal. Their condition in the summer, autumn, and early winter is good, but as they are provided with but little if any artificial shelter during the inclement season of the year, they are very poor in the spring. The loss for lack of proper attention during this season is given at from 2 to 10 per cent. Hollow-horn, hollow-tail, murrain, black-leg, buffalo gnats, and poverty are mentioned as causes of losses among cattle. • Losses from these sources will average about 2 per cent.

ARKANSAS.

Common native cattle are the only animals bred and fed for the market in Arkansas. But little attention is paid to dairy interests, and but few of the better dairy breeds are to be found in the State. Where any attention at all is paid to the business the shorthorn and Jersey breeds are preferred. The annual increase of cattle is given all the way up from 10 to 60 per cent. The breed preferred for beef production is the grade shorthorn, which is marketed from one to four years of age. Large numbers have been sold and driven to western ranges during the past few years. Memphis and Saint Louis are the markets to which cattle are shipped from this State, to which points they are carried both by rail and by boat. The cost of transportation is from 50 cents to $3 per head. No grain is fed, and the cost of raising and fattening an animal is from $3 to $5. Additional railroads and lower rates of transportation are greatly needed. The per cent. of losses by disease among cattle is annually about 5 per cent. Murrain, hollow-horn, black-leg, black tongue, and Texas fever are mentioned as diseases which affect the animals of this State. But few if any cattle are driven into the State from Texas.

NEBRASKA.

Grade shorthorns is the breed most in use in this State for rearing and fattening for the market. No authentic data have been received as to the number of animals devoted to the dairy. The most acceptable breeds for dairy purposes are Jerseys, Shorthorns, and Holsteins, preference being given in the order named. Correspondents variously estimate the annual increase of cattle, some rating it as low as 10 per cent., while others believe the increase to be all the way from 50 up to 90 per cent. Shorthorn and Hereford grades are the breeds regarded as best adapted to meat production. They are usually marketed at the age of four years. Two-year-olds generally go into the hands of stockers, and are full fed on corn for one or two winters. Cattle are carried to market in common stock cars. The cost of transportation is $3.50 to Kansas City, $4.50 to Saint Louis, and $5.50 to Chicago. It costs $35 per head to grain feed and fatten animals. The condition of cattle on farms and ranches is good from June 1 to January 1; the bal-

ance of the year, if not well fed and sheltered, they are usually in very thin condition. The character of the shelters afforded during the winter season are barns, sheds, walls, timber and thickets, banks, bluffs, &c. The annual loss for lack of shelter is 5 per cent.

COLORADO.

Shorthorn and Hereford grades are the breeds most in use for fattening for beef. But little attention is paid to dairy interests. Where an interest is taken in this subject, the Jersey and shorthorn breeds seem to be preferred. The annual increase is variously estimated at from 8 to 95 per cent. Animals are usually sufficiently matured and fattened to be marketable at the age of three years. The cost of transportation is from $1 to $6 per head. The cost of rearing and fattening an animal on the range is from $6 to $10. No cattle are grain fed in this State. Stock is generally driven from the ranges to towns and cities in Colorado, where they are loaded on cars and shipped by rail to Denver, Kansas City, and other Eastern markets. For nine months in the year cattle remain in very good condition. About the only shelter they have during the winter season is in the timber and brush along the streams. The loss annually caused by exposure is at least 5 per cent. About 2 per cent. are lost by Texas fever, black-leg, and poison from loco-weed. Pneumonia is said to cause the destruction of 10 per cent. of the calves in some localities. The loss occasioned by Texas fever was estimated at $100,000 in 1884. The loss for the current year, up to the present time, is estimated at $120,000.

WYOMING TERRITORY.

Shorthorn and Hereford crosses on native Texan cows are the breeds mostly in use for the production of beef in this Territory. Shorthorns and Jerseys are the acceptable breeds for dairy purposes. Correspondents state the annual increase of cattle in the Territory at from 25 to 70 per cent. The animals are matured and shipped to market at three and four years of age. Chicago is the principal market, to which point they are shipped by rail. The cost of transportation from Cheyenne to the above-named market is $7.50 per head. The cost of feeding and maturing an animal is from $6 to $10 per head. The condition of cattle in this Territory is very good during the greater part of the year—very good all the year round if they are fed hay during the heavy storms of winter. No artificial shelters are afforded, and the loss occasioned for lack of proper protection during inclement weather is at least 5 per cent. There should be better railroad facilities for the transportation of cattle, and lower rates. Black-leg is the only disease mentioned, and the loss from this disease alone is said to average 2 per cent. The number of cattle driven into the Territory from Texas is given at 265,000 head. No disease seems to have resulted.

SORGHUM CANE AS FORAGE.

While a large number of reports from various sources in the State of Kansas are strongly in favor of sorghum cane as forage, there is a variety of opinions as to the best method of growing, harvesting, and feeding it. Some are in favor of planting, cultivating, cutting, and shocking, as they would corn, while others are in favor of seeding thickly in order that the stalk may grow fine; cutting with a self-raking machine and allowing it to remain on the ground until well cured; then stacking in ricks and feeding as they would hay. Although some express

a preference for cane cut before the seed is formed, the majority, in order that there may be more nourishment in both the stalk and head, prefer letting it stand until the seed is in the dough.

While it is generally admitted that cane is valuable as forage, it is also agreed that, as a rule, it is not suitable as a constant, continuous feed in cold weather, but should be fed alternately with prairie and millet hay; and with a view to improving the feed and assisting in preserving the cane when stacked, cane and millet are sown together, and the millet allowed to ripen well before harvesting. This method insures good feed. One serious objection to cane when not properly cured is its liability to freeze and sour, and thus while materially lessening its value as forage, causing stock to purge, and making their teeth sensitive and their mouths sore. Where cattle are well sheltered in winter and generously fed on other forage, a field of standing cane, to graze on when the weather will permit, is by some considered desirable, and so far as an individual opinion may go, I wish to add that this is the only manner in which standing cane should be used in the winter season.

The States of Iowa, Mississippi, Arkansas, Nebraska, and Colorado, and the Territory of Wyoming, pay little or no attention to sorghum cane as forage, while Western Kansas raises thousands of acres for that purpose. The notable lack of hay or meadow land in Southwestern Kansas, and the immense influx of population—thus annually converting ranges of many miles in extent into agricultural districts—has caused stockmen to resort to the raising of forage crops to sustain their herds in winter, instead of relying upon buffalo grass and free range as they formerly did.

Many thousands of cattle have already been driven to Colorado, Wyoming, and Montana, and placed upon new ranges, while many others have been sold to form small herds here and there over the prairies, because of the change above referred to, and the days of long-horned cattle, free ranging, extensive round-ups, &c., are destined soon to be "among the things that were," in the State of Kansas.

SOUTHERN CATTLE FEVER.

I am glad to be able to state there has not been so far as I have been able to learn, an outbreak of Texas fever or any other contagious or infectious disease within the Territory assigned me, and that there is at present no immediate prospect of such a calamity befalling us. Thousands upon thousands of Texas and other cattle have been moved from one point to another without causing or spreading any disease, a thing never before known, and since this movement has only been permitted under the supervision of laws, State and national, after strict sanitary and veterinary inspection, the public in general, and stockmen in particular, see and feel the benefits arising from the enactment of such laws and the enforcement of all necessary veterinary and sanitary regulations.

In reply to that portion of my instructions requiring an investigation into the cause, extent, and contagious character of "Texas fever," so-called, I regret to state that I have not been able to obtain any definite knowledge in reference thereto, not already in the possession of the Department.

Respectfully submitted.

LAWRENCE WILSON,
Inspector Bureau of Animal Industry.

LARNED, KANS., *September*, 1885.

INVESTIGATION OF SWINE PLAGUE IN NEBRASKA.

During the year 1884 swine-plague prevailed to a wide extent in Nebraska, and with such disastrous results as to attract the serious attention of all those interested in the breeding and rearing of hogs for the market. The industry is one of great importance to the farmers of this State, as it is through the production of these animals that a great part of their immense corn crops is marketed. The production of corn in this young State in the year 1884 was given at 122,100,000 bushels, valued at $21,978,000. The number of hogs produced in the State the same year was estimated by the Statistician of this Department at 1,786,383, valued at $13,022,732.

In the spring of 1884 the Department was urgently requested by Hon. James Laird, Representative in Congress of the second district of Nebraska, and others, to send a competent veterinarian into the State for the purpose of making a thorough investigation as to the extent and cause of this destructive disease, with a view to the discovery of a preventive or remedy for it. At that time it was impossible to comply with these urgent requests, as all the inspectors of the Bureau of Animal Industry were employed in important investigations that could not be interrupted or suspended. The best that could be done at the time was to institute a preliminary examination by correspondence, as it was thought that a competent veterinarian could be spared from other work later in the season, and at a time when the disease prevails to a greater extent than in the spring. The following circular letter was therefore prepared and forwarded to the county officers in every county in the State, and also to the statistical correspondents of the Department in each county:

DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., April 20, 1885.

SIR: During the year 1884 diseases of swine prevailed to a wide extent in the State of Nebraska, and the losses were so great as to attract the serious attention of all those interested in this industry. This Department has been appealed to by many prominent citizens of this State to institute an investigation looking to a discovery of the cause of the maladies that have proved so destructive to these animals, and recommend such sanitary and preventive measures as the exigencies of the case may require. It was the intention of the Department to send a competent veterinarian to conduct the investigations within the borders of the State, but this has been prevented for the present by the investigation of destructive contagious diseases prevailing elsewhere, requiring the constant attention of the full professional force of the Bureau of Animal Industry. In view of this fact, the Department has determined to institute a preliminary examination by addressing this circular letter to its regular correspondents in Nebraska, and to many other prominent and intelligent stock-raisers of the State, whose names have been furnished us. If those receiving this circular will promptly and as accurately as possible answer the questions on the opposite page, they will confer a favor on the Department and assist in collecting information which may prove of great importance to the swine industry of their State.

Very respectfully,

NORMAN J. COLMAN,
Commissioner.

At the time this circular letter was forwarded there were seventy-three counties in the State. While from a majority of the counties there were from one to four or five replies received, there were a few counties from which no returns were made. Forty-eight of these counties rendered returns as to the number of animals raised, the number affected with disease, the number of those attacked that died, the market value of such losses per head and the total value of the animals lost, of sufficient accuracy to form the following table:

Statement showing the number of hogs raised in forty-eight counties in Nebraska, in 1884, *the number affected with infectious and contagious diseases, and the number of those attacked that die; the market value per head, and the total annual losses by such diseases.*

Counties.	Number raised in the county (1884).	Number affected with infectious and contagious diseases.	Number of those attacked that died.	Market value of such losses per head.	Total value of annual losses.
Adams	60,000	25,000	20,000	$5 00	$100,000
Antelope	17,500	40	25	6 00	150
Brown	1,218				
Buffalo	25,000	5,000	5,000	7 50	37,500
Burt	31,486	15,743	11,807	4 00	47,228
Butler	13,500	2,500	2,250	4 00	9,000
Cass	66,437	16,109	10,763	5 00	53,815
Cedar	20,000				
Cheyenne	200				
Clay	40,000	20,000	16,000	7 50	120,000
Colfax	26,000	5,083	4,783	10 00	47,830
Cuming	96,000	40,000	40,000	3 50	140,000
Custer	20,000	400	80	2 00	160
Dakota	25,000	8,500	7,250	4 00	29,000
Dawson	10,000				
Dodge	35,190	24,000	22,250	7 50	166,875
Douglas	100,000	75,000	60,000	10 00	600,000
Endicott	25,000	5,000	3,000	4 00	12,000
Fillmore	30,000	10,000	6,000	5 00	30,000
Franklin	10,000		150	8 00	1,200
Garfield	2,000		75	4 00	300
Hamilton	50,000	27,500	18,000	5 00	90,000
Harlan	15,500	1,500	1,100	6 50	7,150
Hitchcock	1,000	38	38		570
Holt	5,000				
Howard	50,000				
Jasper	8,500				
Jefferson	10,000	3,000	2,000	5 00	10,000
Johnson	23,547	10,000	7,000	4 00	28,000
Knox	20,000				
Lancaster	67,500	27,000	20,250	6 00	121,500
Lincoln	200				
Loup	7,500				
Merrick	7,500	2,300	2,100	5 00	10,500
Nuckolls	23,935	10,000	7,500	8 00	60,000
Otoe			12,500		90,000
Pawnee	100,000	1,000	500	10 00	5,000
Phelps	6,500				
Platte	24,982				
Polk	100,000	40,000	30,000	5 00	150,000
Red Willow	2,500				
Saline	65,000	10,000	8,000	7 00	56,000
Sarpy	30,000	27,000	25,500	10 00	250,000
Valley	8,000				
Washington	65,000	40,000	30,000	4 00	120,000
Wayne	4,000				
York	52,500	8,750	6,000	7 00	42,000
Total	1,303,695	460,463	379,921		2,445,778

BREEDING AND MANNER OF REARING HOGS IN NEBRASKA, CAUSE OF DISEASE, ETC.

The following extracts from letters of correspondents of the Department not only give the history of the first appearance of the disease in the State, and its many and varied characteristics and symptoms, but

also furnish valuable information as to the breeding and the manner of rearing and fattening hogs for the market. The letters are given in alphabetical order by counties:

Adams.—In one locality a herd would be affected, the disease passing by two or three farms where, perhaps, the hogs, to all appearances, were not kept in good quarters or were not well cared for. It would then attack another lot. Invariably about 90 per cent. would be afflicted, of which 88 per cent. would die. Again, on another farm all hogs would die except the poorest and most worthless ones, and in about sixty or ninety days thereafter the hogs on the adjoining farm would be attacked. Brood sows suffered the least and recovered best, unless when suckling pigs, when all would die. Probably every known remedy has been tried, but all in vain, as in no case has the disease been checked when once started in a herd Where preventives were used the disease apparently was only staved off for a time. Here and there a herd may be found that has not been attacked, but why, no one can tell.—(E. J. HARRIATT.)

The food for hogs in this part of Nebraska is largely corn, fed dry. Many hogs, however, have plenty of green food, also oats, shorts, &c. The sleeping places are not as dry as they should be. For my own hogs (usually from 200 to 300 in number) I have a plank floor, and keep it dry and clean. I always feed my hogs common salt, copperas, sulphur, and occasionally some slaked lime. I also burn the cobs of the corn on which they are mainly fed. Have rye field, but the hogs were in clover yard all winter when the disease was the most prevalent. None of my hogs have died. Care and preventive measures may possibly have had something to do with their healthy condition, as those of my neighbor died freely. In feeding copperas, sulphur, &c., I put each in a separate trough or box, where the hogs can help themselves to all they want. I am certain that wallowing in the mire is mighty poor business for a hog.—(JOHN N. LYMAN, M. D.)

Antelope.—Dry corn and clean water, with coal ashes and occasional salting, are considered all the elements necessary to fatten swine economically. Of course good shelter is a necessity. For the growth of pigs, sour milk, barley, and oat-meal, with good pasture, are best. We have no cholera, and every hog that has died could have been saved with care. The number of hogs raised in the county has doubled in three years, and the number will rapidly increase for years to come.—(F. H. TROWBRIDGE.)

Boone.—I would say in answer to your inclosed inquiry as regards diseases of hogs that no cases have existed in this county. We are from 50 to 100 miles west of the line where the disease has made its ravages. The counties bordering on the Missouri River have suffered the most.—(H. RICE.)

Brown.—This county is quite new, and but few hogs are as yet raised here. No diseases of any kind have appeared among this class of animals so far.—(B. H. McGREW.)

Buffalo.—About one-fifth of the hogs in this county died of disease last year. They coughed and had swollen throats, sneezed, and were very dumpish. When afflicted with sneezing and coughing they would become so dull and dumpish as to be easily killed by cattle running over them. An examination after death showed their lungs to be rotten. The first I heard of the disease was among hogs brought here from Iowa. I regard the disease as contagious.—(NATHAN CAMPBELL.)

Burt.—Hogs are prepared for market in various ways, none of which seem to make any difference, as one lot fed on corn will die as will another lot running on pasture. No remedy has been found to work satisfactorily, except exercise, which has given the best results. Some farmers keep their hogs shifting from place to place. Some claim that feeding the dead hogs raw to the living stops the disease, acting as a physic. The symptoms never appear twice alike.—(A. A. THOMAS.)

Butler.—The hogs in this community are generally kept in corrals or yards on dry feed, and are watered from wells. Still the disease does not appear to be any more prevalent with stock kept in this manner than when it runs in pastures. Corn is the universal food. Almost every community has a "doctor," who can cure the prevailing disease, but, so far as I have been able to learn, but little benefit has been received from doctoring. The lack of fences or lots has prevented the changing of hogs to clean grounds. As a rule, the disease generally kills wherever it attacks.—(C. B. PARKER.)

It should be remembered that it takes a certain percentage of food to supply daily animal waste. The young animal converts into flesh more of the food given than a full grown one. No matter how long the animal is kept, the daily waste goes on constantly. Hence, it should require no argument to show that the true economy is to feed strong from birth if the object be simply to sell the animal when fat. When in proper condition sell the animal at once, unless the state of the market is such that it will pay to hold for a time. If pens are kept clean and not too much crowded the animals will do better. Most diseases are produced by filthy pens and impure water.—(JOHN R. TOWNSEND.)

Hogs are fed mostly on corn. During the season a good many are fed with cattle, but in the winter the disease attacks all alike. Almost everything in the way of remedies have been tried with but little success. Turning hogs on pasture in the spring does not abate the disease. It does not seem to make any difference how hogs are kept as regards cleanliness or protection against weather. Any information you can give to assist us in breaking up the disease will be greatly appreciated.—(SPELTS & KLOSTERMAN.)

Cass.—The general course in this county in raising hogs is to feed the sows while suckling the pigs all the corn in ear they will eat, and to continue the same feeding until the pig goes to market. As to "sanitary" or "preventive measures" I think I know better than I practice, for after my hogs began to die I commenced roasting the carcasses which I fed to those living. I gave salt, slop made of rye, milk-feed, and furnished them with stone coal, all of which was a change and greatly relished by them, particularly the stone coal. I also made them good shelters where they could go in out of the rain and cold dews of night, because I thought they were suffering with lung fever, as, I think, most of the other hogs were. Any feeding that will produce more bone and muscle and less fat will be a good course for me to take, hence I am sowing clover and fencing, so that I can put them out of those filthy little pens—(JAMES HALL.)

Cedar.—The general system of feeding here is corn and water only. Very little ground feed is used.—(CLEON OSBORNE.)

Clay.—Hogs are generally kept in small yards and fed on corn. Usually care is taken to change these yards often. Some parties keep their hogs in filthy yards, holding them for years in the same place without cleaning, and allowing them to become very muddy. It is strange that some of the herds that have had the greatest attention and care given them, from a sanitary standpoint, were among the first to be attacked and suffered the greatest loss.—(J. B. DINSMORE.)

Over 1,000 head of hogs have been lost in this and Nuckolls County by the so-called hog cholera. Messrs. Downing, Bradley, Spears, and Galley, of Nuckolls County, have lost near 500 head.—(D. N. HAMILTON.)

Farmers are in the habit of feeding stone-coal. Such as do have healthy hogs. This has been an unusually cold winter, and hogs would "pile up," and so take cold, which generally brings on the disease. A good plan is to build low, closed pens for them, so they can lie down singly, and thus keep cool. The pens can be ventilated, but at the same time made comfortable. There is too much "in and in" breeding, which has resulted in loss of vital power, making the present stock of hogs too tender to stand the sudden changes of this climate.—(MARTIN CLARK, M. D.)

Nearly all hogs are fed on corn in the ear, both for growing and fattening. A very small proportion follow fattening cattle. There are very few green pastures for hogs in the county. All kinds of remedies have been used, such as copperas, sulphur, charcoal, carbolic acid, &c. These have been used both as remedies and disinfectants in sheds and bedding. Some patent nostrums were also used, but nothing seemed to have any very beneficial effect, as fully 90 per cent. of those attacked died. Those that recovered usually lost all their hair, and were so prostrated as to be more of an expense and damage than of benefit to their owners.—(D. M. NETTLETON.)

Cheyenne.—The business is not carried on to any great extent in this county. There are not 100 head of hogs in the county as yet.—(J. J. MCINTOSH.)

The hogs in this county have been perfectly free from disease.—(WILLIAM J. BRENNAN.)

Colfax.—In regard to feeding and fattening hogs I will say that some are fed corn and others run after cattle. It is asserted by some that worms are the cause of disease in hogs. I have found coal to be the best remedy for worms.—(J. E. JENKINS.)

General opinion seems to prevail that good care, change of feed, plenty of room, occasional feed of soft coal, coal-ashes, sulphur, charcoal, plenty of clean, pure water, have a good deal to do with keeping hogs healthy and free from this epidemic. Many herds have been attacked and literally "cleaned out" without any apparent cause. Others may lose only a part of their hogs. All losses of swine are attributed to the "hog disease" while such disease is prevailing, whether occasioned by the disease or not.—(THERON W. WHILMAN.)

Hogs in this county are usually kept in small lots and close pens. Those having large lots, with plenty of clean, fresh water, seem to be less liable to attack by the disease. Some farmers have used oil cake, parched corn, salts, sulphur, &c., and claim that they have acted as preventives, but seldom, if ever, as cures.—(J. F. WOODS.)

Cuming.—As a rule, in a sanitary sense, hogs received very little care. Fattening hogs are inclosed in small pens in the midst of mud and filth with little or no shelter, and allowed unlimited feed. Corn is universally fed to hogs of all ages and in all seasons of the year. I know of no preventive measures being used except ashes and soft coal, which are occasionally given. Our large stock-growers, when feeding beef cattle, allow their hogs to run in the same inclosure and feed from the droppings of the cattle; but the greater portion of our farmers keep and fatten their hogs in the

manner described above. I notice, however, that our people are beginning to fence in a portion of their lands for hogs' pasturage, and in a few years will undoubtedly show decided improvements in the condition of swine throughout the West.—(D. W. CLANCY.)

In regard to my experience with hogs I will state that I lost 60 head, and have since interested myself as much as possible in finding the cause and remedies for the same. The loss, I judge, at 40 per cent. I consider it a lung affection. Hogs (principally shoats) cough violently for a few days, refuse to eat, become weak, and die in a short time. All kinds of remedies have been tried, such as lye, sulphur, copperas, &c., without any apparent effect. Some have lost every animal in their herds. I have no reason to believe the disease to be contagious; it does not seem to spread, but alights unexpectedly. Corn is *the food* for hogs here. Many are fed from the droppings of cattle which are being fattened; these do not seem to suffer as much as the others.—(H. D. CALLAND.)

Custer.—Having a dry, rolling country, with plenty of fresh water and rich buffalo and bunch grasses, is no doubt the reason we have not been troubled with hog diseases in this country.—(S. E. GANDY.)

Dakota.—Many so-called remedies have been used for hog diseases, but without success. Carbolic acid appears to prevent for a time, but the most successful preventive is assafœtida.—(HENRY W. WOOD.)

The majority of the animals that died during the winter season were large hogs. Those that died in the spring and summer and early fall were pigs, weighing from 50 to 150 pounds.

Dawson.—Hog raising is in its infancy in this county, and so far as I am aware there has been no general system adopted for feeding and fattening the animals. No diseases having made their appearance among our hogs, we have adopted no sanitary or preventive measures.—(L. D. HOUSE.)

Douglas.—There has been but little disease among hogs in this county. Not enough deaths have occurred to be worth recording. Hogs are generally fattened here on corn in open yards, or follow fattening cattle. Many farmers have fed coal, copperas, salt, sulphur, saltpeter, and concentrated lye as preventives.—(E. P. SAVAGE.)

In the first place I think hogs should be fed regularly three times a day, and no more at a time than what they can clean up. Judgment should be used so as to keep them hungry for each meal. They thrive better and waste no food. Salt should be fed very freely. I throw all the ashes out where the hogs can get them, and they never fail to clean them all up. Hogs should also have plenty of green feed, especially brood sows. I notice that my hogs in pasture will eat the clay or marl by the mouthful, and those that do so are generally the healthiest. To prove this place them in a close pen with plenty of manure in it. If they are not ringed they will dig down until they find fresh dirt. Some of my neighbors throw large lots of corn to their hogs at one time. They will run over it and squeal for more, for they never get hungry. Little and often, and in a clean place, is the proper way to feed. I would select a clean place for feeding every meal. Some people carry the idea that a hog will thrive in dirt, but this is all a mistake. Keep your pens as clean as you can.—(E. F. TEST.)

Endicott.—I have devoted twenty-five years to the feeding and handling of hogs in Indiana, from 1860 to 1873, and since then in Nebraska. The present hog disease here is quite different from the old hog cholera in several respects. First, in most instances, it appears among the young hogs from three to eight months of age, and gradually gets up the ladder until all have it. Some of them can be cured by very close attention, by giving something to loosen their bowels, such as fat meat and rich slop, eggs thickened with shorts, castor-oil—something mild—and using turpentine for worms, which generally exist, and are probably the most prevailing cause. A change of feed every twenty or thirty days; not too much corn; more oats, rye, and grass while growing, giving plenty of liberty, exercise, &c., which are undoubtedly essential to health. There are but few persons who know how to raise, feed, and manage a hog properly. I don't claim to. All I know I have learned by experience with them. I do not believe in the crossing of different breeds—better keep them clear. There is too much rush in raising hogs at the present time, with the hope of getting them up to 200 or 250 pounds rapidly with corn, which tends to fatten at the expense of bone and muscle. The result is fat and lard and little lean meat. Both breeders, shippers, and feeders encourage this idea, which is all wrong, and contrary to nature, and will be resisted by nature. Give plenty of liberty; keep the rings out of their noses; let them root. They have their own way of exercising which would not be healthy for man any more than would be our methods for them. Raise your pigs to have some vigor; keep them lively by enough proper feed, and the changing of them from one place to another. Furnish good bedding for all, not only for a few of the boss ones *but for all*, and diseases will claim some other man's hogs than yours. When a pig or hog once contracts this disease and gets well it will never have it again, I care not how much it may be exposed. I am convinced that the way to prevent the disease is to study the nature of the hog. Give him what nature requires.

Do not imprison him by taking away his liberty, and confining him in a filthy pen or cell, with exposed beds or bunks, and feeding him on improper food. We all know that this will kill men, why not hogs?—(H. C. DAWSON.)

Fillmore.—I think hogs need something besides corn and water. I have noticed when I have bedded hogs many times with good straw that in a short time the straw would be gone, the hogs having eaten it. I was conversing with a gentleman a few days ago who said that he had fed his hogs liberally with straw and a small allowance of corn, and they had done nicely without any show of disease. I have fed my own with clover hay, which I think is preferable to anything else. They would leave anything they might be eating and run for the stack whenever I went near it, and would devour the hay greedily. I think when fed on corn alone they have sour stomach, the same as a person, and need something to counteract the acid. As far as I can ascertain, carbolic acid is the best preventive—a small quantity in thin water or slop, say 1 ounce to three or four buckets of water. It is not filth that causes the disease. I knew a herd of 200 head to die in Iowa that were in a clover pasture as good as I ever saw, away from all filth, and they had all the pure water they needed, and were isolated from all other hogs.—(H. LINSLEY.)

Hogs are fattened with corn fed on the ground, and with cattle. Very little shelter is afforded, but the water furnished is generally pure. Most of the hogs attacked were young, thrifty stock hogs. At this time I know of no locality in the county where the disease exists.—(J. JENSEN.)

Corn is the principal food. Some few grind and feed mixtures of corn, barley, &c. Many used prescriptions found in Marvin for the disease, but nothing seemed to do any good. I lost on our farm 140 head. Several of my neighbors lost as heavily as myself. My hogs commenced dying about December 15. About January 10 I wrote my son-in-law to ship 90 head of fat hogs, fearing they might become diseased. My neighbor on the east of my place first lost 100 head. My hogs were in a field across the road (66 feet) and drank from same pool. If the disease is contagious why did it skip 80 rods, jump over a field containing fat hogs, and attack my stock hogs, which were running with cattle which I was feeding for market, and had pure well water to drink?—(H. L. SMITH.)

Franklin.—A majority of the hogs are fed on corn unground, in small yards and pens. Some few farmers have pastures, and feed ground food and milk to their pigs. They are very successful. We as yet have no tame grasses. As we have no disease among our hogs, no preventive measures have been used.—(J. D. GAGE.)

Corn is the principal feed for hogs in this county. We have had but few losses, and we think those that have occurred were brought about by an effort to fatten young animals with nothing but corn.—(J. E. KELLY.)

Frontier.—I do not know, nor have I heard, of any disease among hogs in this county.—(L. WESTGATE.)

Furnas.—Hogs in this county are healthy. The diseases prevailing in the eastern part of the State have not reached here.—(PRESTON MILLER.)

Garfield.—Every hog that dies, no matter of what disease, is said to have died of cholera. I think the cause of disease is attributable to too close confinement, exposure to inclement weather, dry feed and filthy water, and often a scant supply of that. But few have any shade whatever to protect them from the hot summer's sun. Such treatment as they receive ought to destroy a cast-iron hog. If we would care more for the comfort of swine, have a dry, warm place in the winter and a clean, cool place in the summer for them, and look to their healthful condition by feeding more ground, boiled, and green food, we would have less disease among them. I have never lost a hog by disease.—(L. BECKWITH.)

Gosper.—The usual system of feeding hogs is on corn, fed on the ground. Salt and ashes are used as preventives of disease, and I think, to good advantage.—(L. P. MOORMAN.)

Greeley.—No diseases have prevailed in this county. Cattle and hogs are and have been in a healthy condition.—(L. HERBERT.)

Hamilton.—At the time the disease made its appearance my hogs were in splendid condition. They had free range, plenty of pure water, and all the dry corn they wanted. At the same time I gave them slop made from oats, corn, and barley ground together; kept it before them all the while; had good shelter and no old stacks around that they could get to; indeed, everything was as clean as could be. I gave them ashes and burnt corn, and the soap-suds that were made once a week at the house. This made them thrifty and put them in splendid condition. They were May and June pigs, and a big per cent. of them weighed as high as 225 pounds. I do not know whether any of my remedies and preventives did any good or not. I know this much: I lost 75 out of 122 head. Those that lived have done well. Some of those that recovered were dreadful sick. I put 10 head in a pen and fed them cooked feed mixed with oil of tar. Six out of the 10 recovered. As remedies I gave, mostly, sulphur, saltpeter, copperas, and some little arsenic, and put oil of tar, carbolic acid, and coal-oil in their swill.—(H. C. PUTNAM.)

It is impossible for me to give anything like correct answers to the questions propounded, owing to the fact that I have not been at home during the past winter. I am aware that a great many hogs died in this county during last fall and winter from the effects of disease. Some farmers say the disease is cholera, while others call it quinsy or some kind of throat disease. The disease has been very general and widespread. A great many farmers lost all the hogs they had. The disease is still raging. I regard it as contagious.—(JOSHUA COX.)

This locality (I mean my own immediate neighborhood) has not been visited by hog cholera.—(E. S. PHELPS.)

Hogs are usually fattened on corn. A large number of them are usually inclosed in very small pens, which generally abound in filth. People content themselves by forcing down the throats of the living brutes divers disgusting and ridiculous nostrums, while the carcasses of the dead animals remain in the pens, to be eaten by those which have not wholly lost their appetites. A law making the slaughter of diseased animals a necessity, and compelling the isolation of those infected, would no doubt do much towards staying the progress of the disease. The owners should also be compelled to bury or burn the carcasses as soon as possible after the death of the animal. Pamphlets explaining the nature of the disease, &c., for gratuitous distribution, would have a beneficial effect. With proper precautions, and a well-regulated quarantine on the borders of the State, hog cholera would soon be a thing of the past in this locality.—(E. A. STEENBURG, V. S.)

Harlan.—No medicine given has seemed to have any effect. I believe the intense cold weather of the past winter had much to do with the mortality among hogs. There seems to be a lull in the death rate now.—(ENOCH W. POOR.)

The disease is supposed to have been brought into this county by hogs shipped from Iowa. The gentleman who brought these hogs into the county denies very emphatically that they were diseased when he left Iowa with them, and says that he can furnish proof to that effect. However, his hogs were the first to become sick in this county.—(J. A. BROWN.)

Holt.—The hog disease has not yet reached this county.—(E. S. KNICH.)

Hitchcock.—The disease was brought into this county in March of this year by new settlers from Western Iowa and the eastern portion of Holt County. Every hog, so far as I have been able to learn, that has been attacked with the disease has died. The grounds upon which I base my belief that the disease is contagious is in the fact that it was never known in this county until the present spring, and then among hogs that had just been shipped in. In a short time thereafter it appeared among hogs raised here that were yarded by themselves and had never come in contact with those shipped in.—(H. B. STRAUT.)

Howard.—The majority of the hogs are fed on corn and water and confined in small pens. Some have a piece of ground (prairie sod) fenced off, where the animals can run on grass. They are also fed some corn. This system is growing in favor among the farmers. I do not hear of any prevailing disease. I heard of a few hogs that died in a distant part of the county, but I did not learn the nature of the malady. There are a large number of hogs raised in the county. Almost every one has a few, and there are some persons who raise from 100 to 200 annually. The losses from disease have been very light.—(C. H. THOMPSON.)

Jasper.—Hogs have always been healthy in this county.—(B. M. ALLEN.)

Jefferson.—Hogs are partially fed on ground food, such as meal, shorts, and ground rye. They are fed in troughs. Some are fed on corn on floors, and offal from stall-fed cattle. They have sheds to sleep under, and are given water from wells. We have used all the remedies recommended by the medical fraternity to prevent the appearance of the disease, but without avail. Like cholera in the human family, it spends its fury and goes for new victims in another county. It was the most fatal in this county in the fall of 1884. The animals are comparatively healthy at this time.—(J. B. MCDOWELL.)

Johnson.—Almost all methods of feeding practiced by western farmers is practiced here. When the disease made its appearance in the county I had between 50 and 100 head of hogs, and I commenced feeding what is known as the "poke-root" remedy. I used this in slop made of ground rye. Sometimes I would substitute turpentine for poke-root. My hogs are now healthy and doing well. A man residing 6 miles west had a lot of hogs apparently healthy and doing well. Within two day's time he lost 60. My opinion is, if we had our pastures fenced "hog tight," and would give our pigs summer range and more time to develop muscle and bone, we would have less disease among our swine.—(J. H. LALICKER.)

Kearney.—In nine cases out of ten the feed for hogs is dry corn. I suffered more from the ravages of the disease than any one I know of in this part of the county, as I lost 18 head in less than one week. A near neighbor lost 11, another 13, and several others 3 or 4 each. I tried all the patent hog medicines without effect. Finally a gentleman in Minden told me that he took concentrated lye and mixed it in a bran mash and gave it to his hogs for a similar disease and all those that were able to eat

got better. I tried it and my experience was the same. Some of them had a cough so I had to repeat the dose occasionally and they finally pulled through all right. Since then I have seen statements in the newspapers to the effect that others have used it with good results.—(R. M. COPE.)

Knox.—Those having hog ranches allow their animals to run at large in inclosed pastures in which are spring creeks and clear streams. Late in the autumn or early winter they are inclosed and fattened on corn, boiled potatoes, bran, &c., until fit for market. The superior quality of water in this county, its freedom from alkali, and the proper administration of some common preventives like salt, &c., are, in my opinion, the main reasons of our hogs being so free from disease.—(C. L. BOON.)

Corn appears to be about the only feed given for fattening hogs. From the best information I can get I do not think any disease is prevailing among hogs in this county at present.—(H. S. NORTON.)

Considerable attention is being given to this industry at present. As hogs in this county are free from disease no preventive measures seem to be necessary. Corn is the principal feed used for fattening these animals.—(F. M. DEMARANVILLE.)

Lancaster.—Hogs in this county are in nearly every case fed corn on the ground.—(W. F. TRUELL.)

My herd consists of about 75 to 100 registered Poland-China hogs. My buildings, well, and all fixtures were placed new in the early part of 1884. In October I began sweeping the floor of my pens with a broom about once in ten days, and then sprinkling with a weak solution of carbolic acid after each sweeping. My hogs run on clover pasture in the summer and in the fall on rye pasture. My feed was one-half corn on the cob, and the other half consisted of wheat shorts, ground oats, and wheat bran; at times some oil cake. I fed to them 30 pounds each of sulphur and copperas; lime was also given, and about 10 bushels of charcoal, and all the stone coal ashes and salt they would eat. My pens are well built, and at each sweeping new bedding was given. After all this, on December 25, the disease appeared among my hogs. After this I fed cooked turnips and gave 59 pounds of capsicum. I lost 35 shoats out of 78 head. About one-half were killed. The remainder kept right on growing, and are booming now.—(M. L. TRESTER.)

Last fall I had on my farm about 250 head of hogs and fall pigs. I never had or saw hogs in better condition. While one neighbor lost over 100 head and others a less number, and others in the county many more, my herd was apparently healthy, and remained so until after the 1st of January. I summered my herd on green feed (rye), and fed liberally of soaked corn. Once, and sometimes twice a week, I fed them salt and sulphur mixed either with charcoal or ashes. I kept good, clean water by them all the time. I thought I was going to escape the disease entirely; but late in the winter I lost a few small shoats. But my heaviest loss I am sustaining this spring with my young pigs. My brood sows never looked better, but I am losing nearly all my young pigs. Some die with the thumps, some with the scours, and some come dead. Is this, I would like to know, the result of the same disease handed down to another generation? Almost every one that had the disease in their herds are having the same trouble. I am losing dollars this spring where I only lost cents in the winter, for out of 10 sows that have farrowed I have only 13 living pigs, and I know cases worse still.—(T. V. WOLFE.)

Some think the disease was caused, first, by over-feeding with green corn. This is the opinion of a gentleman residing at Lincoln, who was a heavy loser. The animals I lost myself were from old fashioned hog cholera. I made no *post mortem* examinations last fall, but I did two years ago, and the symptoms were then similar. Then some had their lungs congested while others did not, but all were infested more or less with long, round worms. At that time I gave the hogs copperas, sulphur, turpentine, and coal oil, thinking some of these articles might do good, but they had no effect whatever. The hogs died all the same. Last summer I fed ashes and salt, also coal, but when they got sick I did nothing. They seemed to fare about as well as if I had followed the various methods recommended, as I did two years ago. They all died just the same.—(JOHN P. LODER.)

Lincoln.—In the month of January, 1885, we lost 5 hogs. They refused to eat and were scarcely able to move around. After being sick five or six hours they commenced swelling around the throat and jaws. Later the jaws seemed to become stiff, and it was very difficult for them to open their mouths. Breathing then became very difficult, and a half hour or so before they died we could hear them breathing five or six rods away. They finally appeared to die of strangulation. The tongue was black. The animals lived from twelve to twenty hours after the discovery of the first symptoms of illness. Our loss was 5 out of 42 head. I fed my hogs rye, oats, corn, pumpkins, squashes, and raw potatoes once a week. While sick I fed them burnt corn. I also put up a condition powder, composed of antimony, fenugreek, ginger, gentian, sulphur, comfrey root, indigo, resin, and saltpeter. After we commenced feeding this powder we had no further deaths. However, all died that showed any symptoms of disease. I think the disease was an affection of the throat, and that it was contagious.

I made no *post mortem* examination. In the latter part of December, 1884, my neighbor, Mr. George W. Parsons, lost 3 hogs by a similar disease. Some others in our neighborhood sustained losses, but I do not know the number that died or the value of the animals.—(P. B. BLOOM.)

Loup.—Hogs are generally fattened on whole corn. There has been no disease among these animals in this county.—(A. C. ALGER.)

Madison.—No disease has prevailed among hogs in this county to a sufficient extent to affect the interests of farmers. Hog cholera has not yet gained a foothold here. As to the manner of feeding, there is no general system, unless it be to let the hogs shell and grind their own feed.—(THOMAS W. WARD.)

Merrick.—Hog disease in this State was scarcely known prior to October, 1883. Iowa and Minnesota had a very poor crop of corn, and Nebraska had an abundance, and it was so cheap that our farmers and feeders went to the above-named States and shipped thousands of stock hogs here. With these came the disease which is generally known as cholera.—(A. SUTTON.)

We had no disease in this county until the fall of 1883, when it was brought here by hogs shipped in from Iowa and Minnesota. We give our hogs various preventives, but generally without beneficial results.—(JOHN L. MARTIN.)

Nance.—No hogs have died of disease in this county for four years.—(J. W. MCCLELLAND.)

Nuckolls.—The best course to pursue in fattening hogs for the market is, according to my experience, to take the pigs at two weeks old and teach them to eat oats and corn, which have been soaked in a barrel prepared for that purpose. One will be surprised at the amount they will soon learn to eat. They should run with the sows until they are eight weeks old, when they should be weaned. It will be found that they will not stop growing. Continue the oats and corn with plenty of charcoal and ashes, and at the end of nine months you will have a hog that will weigh 300 pounds. As a preventive of disease I use carbolic acid. I sprinkle the bed and also mix a few drops in their feed, with a little turpentine added. I have lost but 1 hog (and he died of a tumor), while many of my neighbors, whose hogs were not 300 feet away, lost heavily.—(WILLIAM C. OVELMAN.)

All my neighbors, whose hogs summered in lots containing no grass, whether they were fed alone or followed cattle, lost about 75 per cent. of their animals. In lots where there was grass and they could graze at will, there has been no disease so far as my knowledge extends. Myself and neighbor, who have grazing lots, are the only ones exempt within several miles around. We feed the following preparation, however: Sulphur, copperas, and antimony, 1 pound each; saltpeter, ¼ pound; salt, 4 quarts; ashes, 1 peck; mixed and kept constantly in an open trough. Hogs are still dying of disease.—(BYRON D. BROWN.)

Otoe.—The disease seemed to vary very much in different herds in the same locality. In most cases it was evidently lung disease. In some it was what was formerly called hog cholera, with vomiting, purging, and quick death. In some localities the disease resembled measles, yielding to the same treatment used for that disease in the human patient. This last form was equally fatal, owing to the difficulty of keeping the hogs dry and warm. The only prevention of disease seemed to be cleanliness, good care, dry, clean beds, frequently changed, and the free use of carbolic acid in the water and as a disinfectant to feeding grounds, troughs, &c. In addition to the carbolic acid the writer used a little sulphur as a germ-destroyer, given with salt. I have never had disease in any form in my herd. This township escaped, with the exception of one herd in the northwest corner. That herd had been gathered together—to follow cattle—from many different localities. Out of 260 head 220 died. We need scientific help.—(JAMES W. EATON.)

Pawnee.—The general system of feeding here has been that generally practiced in other counties where hogs run at large—that is, whenever it is possible, hogs are kept and fattened in inclosures containing water, either running springs or living pools. In such cases no attention is given to cleanliness or any arrangement for sanitary purposes. In some other cases (comparatively few) the inclosures do not inclose living water, but the necessary water is suppled from a well or wells. In these cases considerable care is given to cleanliness and sanitary arrangements. A marked advancement is apparent in this direction in the last few years. I think the opinion is gradually taking possession of the minds of the people (mixed at present with considerable uncertainty) that almost all the hog diseases in this county came originally from the hog-pens along the various streams of water, and from these spread to the upland farms. The general mode of feeding is by throwing the ears of corn to the hogs on the ground in their pens. In case of cattle feeding the principal hog feed is the droppings. Comparatively few shell and boil the corn. I think it may be assumed in this county, as in every other county where hogs have fresh, clean water to drink, and clean healthy food to eat, they are seldom if ever attacked with disease. They should therefore be provided with healthful, comfortable sleeping places in winter, and cool shades for summer, but not with mud holes or water to wallow in.

Mud and water (to wallow in) is necessary to the hog only when its blood is impure, producing a feverish itching of the skin —(J. L. EDWARDS.)

Phelps.—There have been no contagious diseases among swine in this county to my knowledge during the past year.—(E. D. EINSEL.)

Our most successful hog-raisers use as a preventive for disease charcoal in large quantities, common salt and coal-tar, kept constantly in feed lots where the hogs can go to it at any time. They are also furnished with plenty of fresh, clean water.—(R. T. MCGREW.)

Platte.—Hogs are generally fed with or after cattle. I have heard of considerable sickness, generally among young shoats from small up to 150 pounds. Most of the large hogs that died were smothered by piling up in cold weather. We have given hyposulphate of soda as recommended by the United States veterinarians, and know of quite a number of others who have done so, but in our own herd we claim that the disease still exists. We had about 140 head of young hogs, out of which we have probably lost 40. The older hogs had a cough, but they did not die. We have brought in no hogs from outside Our herd runs in a large pasture with timber, where there is plenty of pure water and good comfortable sleeping quarters. They are mostly Berkshires crossed with Red, and are in very good condition. I think the greatest losses have occurred among young hogs all over the county, and with the same disease, though the symptoms differ. We have not separated our hogs or done anything for them.—(E. A. GERRARD.)

Red Willow.—This county is in the western portion of the State almost on the frontier, and as yet the breeding of swine as an industry is in its infancy. From my own observation I can say that what few hogs we have are and have been free from disease.—(J. W. DOLAN.)

Richardson.—During several months past there has existed a fatal disease called cholera among the hogs in the north and the northeastern part of the county. The losses have been heavy, amounting perhaps to hundreds of heads. The losses have fallen heavily on many, and the disease yet prevails.—(F. M. WILLIAMS.)

Saline.—A disease pronounced cholera has prevailed extensively among hogs in this county. The losses from the disease will aggregate $50,000 or more.—(JAMES MCCREEDY.)

Sarpy.—The general system of feeding in this county is corn and water, grass, and occasionally rye pasture In fattening hogs for market the principal feeding is corn with water. As a sanitary measure, I used Hesse's hog cholera preventive; also two or three drops of carbolic acid in a bucket of water—about eight quarts of water. Concentrated lye in water was also used. I used sulphur, saltpeter and flax-seed in equal parts, but none of these articles seemed to do any good. The sick hogs would generally lie together, and by this means I could tell when they were taken sick. The jaws of some of the animals would swell enormously, sometimes apparently to 50 pounds, in weight, but when cut open there did not appear to be anything in them.—(OWEN WARD.)

I have lost about 100 head of hogs by a disease which I consider contagious for the following (and similar) reasons: About a month after my hogs stopped dying I purchased a hog from a neighbor, who lives about 2 miles from me. In about a week after I brought him home he began to show symptoms of the disease. In about two weeks I was satisfied he had it in good shape; and in about four weeks he was dead. The party from whom I purchased him has never lost a hog by disease. Feeding is done here strictly with dry corn. I notice that those who have saved their hogs are those who feed plenty of milk and ground feed for fattening, and also to sows raising pigs. After the first symptoms some of the animals would die in two or three days, while others would last a month or more. Generally those in the best condition lasted the shortest time.—(J. GIDLEY.)

Various methods have been used to prevent the disease, but all to no purpose. No advantage seems to have been gained by any method of feeding. In some cases hogs running at large get along the best, but care counts for nothing.—(PATRICK DAWD.)

It is my opinion if hogs had more exercise and less dry food there would not be so much sickness among them. Inclose them in a pasture, allowing at least a half acre to each hog. The pasture should contain a variety of grasses, such as clover, alfalfa, blue, and orchard grass. Some rye should also be sown for fall, winter, and spring feeding. In addition, give half the dry food required in a close pen. The hogs should have an abundant supply of pure spring or well water. In summer they should have high sheds to keep off the hot rays of the sun, and in winter they should have low, warm sheds, with dry straw for bedding. Commence feeding from the 1st to the 15th of August, and gradually increase the quantity each week, giving them plenty of salt and ashes, charcoal, &c., until the regular feed is established, and so continue until they are fattened.—(THOMAS WELCH.)

In 1884 I had 52 very nice hogs. They averaged in July from 150 to 300 pounds each. In May I had fenced in 15 acres of rye, which I had seeded to timothy and clover. So you see I had a good new range, with an abundance of clear, fresh water

from a well. I fed some corn twice a day. In July the animals were attacked with a disease commonly called cholera; but it was not cholera at all. The hogs were sick from one to three weeks. They were dull and drowsy; had no appetite and but little thirst; would be very costive for a few days, and this would be followed by black diarrhea and fever. The lungs in those I examined were very bad. I lost 20 out of 52 head. About the only thing I used was carbolic acid, which I fed in their swill. I also lost 61 out of 65 head of my spring pigs. The losses of many of my neighbors were much heavier than my own. The disease still lingers, and is taking off our stock of winter and spring pigs.—(J. D. SNELL.)

Seward.—Heretofore hogs in this State have not been afflicted with disease, and have always fattened easily and quickly; but for two years past our winters have been much colder, with more than the usual amount of dampness, and notwithstanding this our farmers have made no changes in their yards. I think this has had much to do in causing disease among these animals. I find that, as a general rule, those farmers who take good care of their stock do not lose much from disease. The range cattle have pneumonia from exposure, and I believe if examined closely hogs will be found to be diseased in the same way. Nearly every one here believes the disease among hogs to be cholera, but if it is the symptoms are very different from those manifested in Illinois and Iowa.—(C. M. TURNER.)

Many things in the shape of medicines and preventives have been used, but with little or no success. Hogs kept in a close, dry lot, fed dry corn, and given dirty or stagnant water to drink are the first attacked by the disease, while those which get clear cold water and a change of feed, and especially those which run on pasture and get plenty of green feed in its season are generally the last to be attacked. When a herd of hogs first show symptoms of the disease, if the well ones be separated from the sick and removed some distance to a new lot on clean ground, the disease will be arrested. Sometimes not another hog will die. If not separated and allowed to remain in the old filthy lot, often not one will be left to tell the fearful story.—(J. W. FIGARD.)

Valley.—We have never had diseases among our hogs in this county. This is a healthy locality for both hogs and cattle.—(J. E. HALE.)

Washington.—Neither care nor treatment seem to have much to do with our hog disease. A great many of these animals are raised by following cattle and picking up the droppings. This is considered the very best of food. Others are kept on good, clean pastures, with pure running water, yet all seem to die alike. Different parties have tried all kinds of drugs, but all to no purpose. I have never yet heard of any certain preventive or cure. The disease is chiefly confined to young hogs. Old sows and large hogs are not so liable to contract the malady.—(J. S. STEWART.)

Wheeler.—So far as I have been able to learn, the hogs in this county were not visited with any contagious disease in 1884.—(R. L. STAPLE.)

York.—I generally keep from 100 to 300 head of hogs, and have never yet lost any by disease. I use carbolic acid freely; 5 per cent. of acid to 95 per cent. of water. This I sprinkle around the pens and sleeping places, and once a week I give the following mixture: Five pounds each of copperas, sulphur, salts, and saltpeter; 1 pound of blood-root, ½ pound of black antimony, and 1 bushel each of salt and ashes. This I mix and feed dry. It will be found sufficient for 200 head. This is my preventive, and all who have used it report good success. I think feeding soaked corn, or cornmeal soaked the best feed, but to change from corn to oats and barley is very good. I notice that thoroughbred stock is less liable to disease. If hogs are kept loose in their bowels and free from worms they will be less liable to attack. I regard worms as the primary cause for all diseases in swine.—(H. W. FAY.)

Soft coal, copperas, and rosin seem to act as preventives. Turpentine administered in their feed seems to act both as a preventive and cure of swine disease. Kerosene administered in their food is also regarded as a preventive. Several farmers within my knowledge have stopped the disease by using kerosene in the swill given the hogs.—(L. J. GAUDY.)

DR. GERTH'S INVESTIGATION.

Early in June last Dr. J. Gerth, jr., D. V. S., was appointed by the Commissioner and directed to proceed at once to Nebraska and make a thorough investigation as to the cause of the disease prevailing among the swine of that State, and give such advice as he might deem expedient to prevent its extension. He arrived in Nebraska about the 20th of June, and at once commenced the investigation. Shortly after his arrival, however, he was tendered the position of State veterinarian, a position created by the legislature about the time of his arrival. His acceptance of this office caused him to relinquish the position conferred upon him by the Commissioner of Agriculture, and the investigation

was brought to a sudden termination. The following is the brief report made by Dr. Gerth on severing his connection with the Bureau of Animal Industry:

INVESTIGATION OF HOG CHOLERA IN NEBRASKA.

Hon. NORMAN J. COLMAN,
United States Commissioner of Agriculture:

SIR: In compliance with your request to make investigations of hog cholera in Nebraska I proceeded to that State without delay, leaving New Jersey on the 17th day of June, 1885. Reaching Omaha, Nebr., on the 19th instant, I soon became acquainted with the importance of this investigation, and satisfied that I would be blessed with abundance of work.

Instructions were received from Dr. Salmon, Chief of the Bureau of Animal Industry, to make special inquiries as to the history of the introduction of hog cholera into this State and its mode of spreading. Acting upon these instructions I made diligent inquiries in that direction with the following results:

So far as could be ascertained by careful investigation hog cholera has existed in Nebraska ever since 1871. The first serious outbreak made its appearance in one of the northeastern counties of this State, being introduced there by sick hogs coming from Iowa. From that point it continued to spread south from one county into another, confining itself to the counties bordering on the western banks of the Missouri River, until it crossed the Platte River. From that point it spread in a westerly direction. After this period the disease abated to some extent, but never disappeared entirely from the State. For the past few years it has again been spreading in an alarming manner, sufficiently so as to interfere with the hog industry of this State. The losses have been as high as 90 and 100 per cent. Last year the loss was estimated at over $2,000,000. Hog cholera at present exists in all eastern, southern, and southwestern counties of this State, and is spreading rapidly. In nearly every instance I could trace the introduction of the disease into a herd to their coming in contact with diseased animals. Another chief cause of its spreading appears to be due to the fact that hogs from a diseased herd, apparently healthy, in which the disease had assumed a chronic form, were offered for sale and purchased by unsuspecting farmers who innocently allowed them to mingle with their healthy animals.

During my investigations I made a total of fifty-eight autopsies. The *post mortem* lesions have been so frequently described in the reports of the United States Department of Agriculture and other reports that it is hardly necessary to describe them here. However, a few *post mortem* lesions of unusual occurrence might prove of some interest. In four cases, three of which were chronic and one acute, the pericardium was found firmly and completely adherent to the heart, small portions of which could be detached by careful manipulation. Notwithstanding every heart was carefully dissected, I failed to find the ecchymosed spots described as being so commonly found on the endocardium. In two subacute cases the lungs were consolidated and filled with cheesy tubercles about the size of a hazel nut. Tubercles could not be found in any other part of the body. The circular ulcers so frequently described as being nearly always found in the cæcum, were only found there in one instance, and nine times in the colon. *Post mortems* were made on 5 animals that were diseased with hog cholera over six months prior to their destruction, and at the time of death were apparently healthy; in fact they appeared so bright that experts failed to pick them out of a lot of healthy animals when requested to do so. In each case lesions of hog cholera were still present in the lungs and intestines. This fact I consider of great importance in explaining a number of so-called sporadic outbreaks. I am inclined to believe that some of these chronic cases frequently introduced the disease into healthy herds.

In the way of symptoms the only interesting thing noticed was that nearly every sow in pig would abort.

A total of twenty-eight places were visited, located in twelve different counties. Complaints were received also from thirty other places where hogs were dying, but it was impossible for me to visit them.

In conclusion I would say that the loss this year may exceed that of last, and if you would kindly send an inspector out here it would be sincerely appreciated by the stock-raisers of Nebraska and by the State authorities.

Respectfully submitted.

J. GERTH, JR., D. V. S.

LINCOLN, NEBR., *July*, 1885.

EXTENSION OF CONTAGIOUS ANIMAL DISEASES AND METHODS FOR THEIR LIMITATION.

BY EZRA M. HUNT, M. D., SC. D., TRENTON, N. J.

We believe it to be acknowledged by all that the contagious diseases of domestic animals demand the most intelligent and indefatigable attention of all those who would promote the material prosperity of the country. Whatever may be the advances in manufactories and arts, our broad domain of territory and the demands of the world for animal food are the assurance that a large proportion of our capital and industry as a nation will be centered upon the rearing, care, and fattening of animals. The prosperity of the nation depends upon this as much if not more than upon any other one of its material resources. Let any wide spread epizootic break out among any class of animals, and the local effect in paralyzing resources is at once realized. Multiply this by an extension all over the land, and by its occurrence in all classes of live farm produce and the seriousness of the disaster is at once apparent. It is all the more serious because with our extended prairies and grass ranches, and our modes of grazing and of rearing cattle, sheep, and swine, it is exceedingly difficult to arrest a contagious disease after it has obtained a firm foothold.

It is unfortunately to be recognized, both as to this and other countries, that the prevalence of animal diseases, and especially of animal contagion, seem to have increased in the last score of years. Not only has there been the development of new diseases, or new forms of old diseases, but in many cases the virulence of the contagion seems to have increased. Texas cattle fever belongs to the present last quarter of this century. Contagious pleuro-pneumonia did not make its appearance in this country until about 1847, and not seriously until 1858. Swine-plague dates back to about 1860. Chicken cholera is of still more recent record. We can only approximately arrive at the losses which have occurred, but it is safe to say that they have not only got into the millions but into the billions. With these facts in evidence, and with the future before us we should look upon the prospect with anxiety and alarm were it not that the knowledge of sanitary conditions as applied to animals is advancing, as also a knowledge of methods of inoculation, isolation, disinfection, and skilled modes of administration. This knowledge if well applied is equal to these emergencies.

Under our form of government, the most difficult questions that arise as to these contagious diseases are those which have reference to the degree in which individual States and the General Government should act in the premises. It is undoubtedly time that each State should make full and adequate provision for the limitation of diseases which arise in it. But if in addition it appears that one State is constantly the focus of contagion for another, and that any State is comparatively helpless

to prevent the introduction of these diseases, there is certainly some need of that provision on the part of the General Government which will prevent this constant conveyance of contagion by the usual routes of transportation. This can only be done by such action on the part of the General Government as shall recognize the contagious diseases of animals as a peril to the national industry and production, which concerns the whole country.

As an illustration of the effect that this unregulated movement of stock has upon the interests of the country and upon individual States, we may cite some evidence furnished for several years past by the experience of the State board of health of New Jersey in its oversight of the contagious diseases of animals. The first occurrence of a center from which contagious pleuro-pneumonia spread in New Jersey was made by the purchase of animals in Brooklyn, N. Y. (See the communication of General N. W. Halsted, president of the State Agricultural Society of New Jersey, to the Agricultural Department of the United States, 1878.) Of an outbreak which occurred in some of the lower counties of the State in 1878–'79 we have not sufficient facts to prove the origin. No subsequent cases were traced to these centers. But in 1861 it made its appearance in Burlington County, in the herd of Mr. Hancock, who introduced it by means of purchases made in Philadelphia. For a long period after this time there was no skilled oversight of the disease in this State, and it is impossible to trace all its sources. But from the time that the State instituted special legislation the evidence of its derivation from other States has been very complete. Those who served under the first law of 1879, and under the direction of General W. H. Sterling, are, we believe, unanimous in recognizing that even at that time it was thoroughly practicable to attempt and expect the complete eradication of the disease if only we could be protected from incursions from other States. In the case of New Jersey this is a very difficult matter. The direction of traffic brings through it most of the live animal produce of the Middle, Southern, and Western States. As calves and young cattle can usually be bought cheaper than they can be raised, the dairies are also dependent upon the outside supply. So fully did the cattle commissioners appreciate this, that the chief expense was incurred in an attempt to guard against the invasion of the disease from the North and the South. Indeed, at that time so circumscribed were the foci of contagion that it is believed a reasonable activity on the part of the authorities of New York, Pennsylvania, Maryland, and Delaware, and special surveillance of the stock-yards of Philadelphia and New York, would have stamped out the disease from the whole country. The discouragement was that there was not corresponding action between the States; that the question was raised as to how far State could, under the claim of emergency, form laws regulating the traffic in cattle between the several States. Without such co-operation any one State did not seem to be justified in the expense involved. Even as it was, our authorities came fully to recognize Long Island, Staten Island, and the stock-yards of Philadelphia as the constant foci of the cases that occurred in this State, those which were in the State being in general susceptible of eradication by stringent local measures.

In 1880, when the care of these diseases was required of the State board of health, the first question that arose was how far it was practicable to attempt to eradicate the disease by a system of inspection in which we had not the co-operation of the other States. It was found upon full investigation that no such imperfect inspection as could be ar-

ranged, without general co-operation, would accomplish the object desired. Had the General Government at that time been able to enforce laws between the different States with the aid of local authorities in dealing with the few centers of contagion in the State we should long since have been rid of this visiting pest.

Starting with the first cases that came under our cognizance, we have the almost continuous evidence of the outside introduction of the disease. Among the first was the series of outbreaks that occurred in Burlington County. Of all the score and more of herds thus affected, it is a somewhat singular circumstance that in but a single instance has the spread been from one herd to another. In recently recounting with our veterinarian the cases that had occurred we were able to trace each one of them directly to purchases made in Philadelphia. This is so true that many farmers have ceased to fear the disease on the ground that they never purchase cattle whose locality is not fully known, and join with their neighbors in self-protection. The disease as met with in this State occurs chiefly in the counties bordering on New York and Philadelphia, except where some prominent and extensive dealer is in the habit of procuring stock in these cities for farmers in the more central counties. Thus the cases in Burlington and Hunterdon Counties were traceable to individual drovers or cattle-dealers. Of course there is an occasional failure in our ability thus to trace the disease back to an outside source, and there are cases where, as in a herd in Essex and Union Counties, the outbreak could only be traced to Hudson County. This county, for a time, became the center of contagion, because the New York officials had succeeded in driving out and into it some of the worst stables. Even yet we are annoyed with dealers residing in New York, who let out cattle on commission or by chattel mortgage and introduce the disease by cattle they purchase at the stock-yards.

Some of the roundabout tracings of an outbreak are as curious as they are annoying. Thus, in December, 1881, we lighted upon a herd in an out of the way locality in Warren County, from which no other herd became affected. The disease had been there some time before our discovery. It had been brought directly by the purchase of 3 or 4 Alderney cattle in New York City by the owner of the herd who lived elsewhere.

In the same year a Children's Home on Staten Island suddenly came to have a deficient supply of milk, and was compelled without knowing the cause to change its source of supply. The herd was affected with pleuro-pneumonia. A Staten Island dealer in poor meat bought this herd at a very reduced price. Some of the sickest cattle were killed, while 3 others were privately boated over one night into New Jersey and sold as milch cows. Soon one after another began to show the disease. These 3 cattle cost the State several hundred dollars, and would have cost much more, but that we were able to trace herds and quickly deal with them.

Many a record similar to this one of Dr. Miller is found:

December 7, 1881.—Examined one lot of 6 cows coming from Mount Holly, Burlington County, and another of 5 coming from Elmer, Salem County, in each of which was 1 cow that I detected as having lung trouble in my ferry examinations.

The several veterinarians who assist the board and who do most of the actual service, are united in their conviction that the stamping out of pleuro-pneumonia in the State would be a very simple matter if only no cattle, and especially no dairy cattle, were brought into the State from herds or stock-yards where the history is unknown. We believe it is not fully realized how often the close dairies of the cities become

propagators of the disease by contact with some mild or recent chronic case that has been sent to market from an infected herd. These in turn distribute cattle into the surrounding country on the plea that they have become poor by close keeping and will soon improve on country pastures. Not infrequently the farmer who purchases finds to his cost that he has a case of chronic pleuro-pneumonia or tuberculosis.

Cases of tuberculosis are multiplying in the State. It will eventually become a source of great loss to the stock industry. We cannot always claim that this is derived from other States, for it seems induced by close confinement, by overmilking and various other debilitating causes. But that it is often caused by the introduction of a tubercular case into a herd cannot be questioned. Just at this writing (November 3, 1885), we have the following to communicate from one of our veterinarians:

I visited the farm of Mr. W——, of Cumberland County, to-day, and found a herd of 11 cows and 2 bulls, 7 of which I am quite sure are suffering from tuberculosis. Two of them, which are in a deplorable condition, should at once be killed and buried. The owner is poor and has already lost 10 cows. About Setpember, 1883, his herd consisted of 5 cows and his landlord purchased 9 heifers from over in Pennsylvania and let Mr. W—— have them. Mr. W—— did not think some of them well at the time. One of his cows died in January, and he has lost more since. The landlord took one to his farm from the same drove and she died also. Of those that have died 5 were the heifers and 5 were his own cows.

In the purchase and transfer of such cattle there should be some mode of examination or inspection.

Several cases of Texas or Southern cattle fever have occurred in this State, but it is worthy of note that all of these outbreaks have occurred among recent purchases from stock-yards, and that in no single instance has the disease been communicated. While no doubt animals exposed to the excretions or otherwise might have been infected, it has so happened that no other animals have been affected, even though in one case there were cattle in an adjacent field. We have traced four outbreaks, and all in cattle lately bought in Philadelphia.

Some of the facts related as to the sources of contagious pleuro-pneumonia are illustrated as to pneumo-enteritis, or swine plague. It, too, is a disease largely spread by inter-State communication. But as it has a much more diffusive contagium than that of pleuro-pneumonia, and is often caught from pens or fields several hundred yards off, and probably carried by the buzzards and other birds of prey, it is not so generally dependent on outside sources; yet we are able not infrequently to trace its direct transportation over long distances by purchases made and brought into the State. We have known it thus to be transferred from one part of the State to another, although its greater prevalence in border counties has not been so noticeable as in the case of cattle diseases.

While it is the judgment of those who are most identified with the farming interests of this State, as well as that of our board and its veterinarians, that very much has been done to limit the contagious diseases of this State, and to prevent their being a menace to the stock interests of other States, we have plainly and fully declared that we do not expect permanently to eradicate these diseases without the intervention of the General Government, and that a far more efficient intervention than can be secured under any of the present provisions of law are necessary. It is possible, at least, to stamp out pleuro-pneumonia, as well as to be in a position to prevent the introduction and spread of foot-and-mouth disease and rinderpest, and to greatly limit the prevalence of the swine-plague.

The first great step in our judgment would be the entire separation of the purchase and dealing in milch cows or cattle intended for milk from those intended for fattening and killing. A separation and inspection of these would be feasible when a skilled and constant oversight of the entire cattle trade of the country would be impracticable. We do not recall the case of the sickness or slaughter because of pleuropneumonia of a single steer in this State. While it cannot be claimed that these are always exempt, the disease would die out if dairies and milch cows could be protected therefrom. It is entirely feasible to require that any person selling a milch cow in one State to go into another should give a written guaranty that there has been no exposure to contagious disease. In the case of large cities and chief marts of exchange or chief crossings of milch cattle from one State to another, there should be an inter-State inspector, available both to the seller and to the purchaser. The arrangement of cattle or milch cattle days would not be an embarrassment upon transfer. In this State every township and city board of health, as well as the assessor, are the vehicles of information, and have a certain relation to these diseases, such as would be very serviceable if they could be assured against outside invasion of herds, but not enough if they have to trace all purchases. In addition to some form of regulated disciplined inspection, there is need of such carefully adjusted rules as will define inter-State rights, or enable the General Government to enforce proper regulations. The work initiated by the Bureau of Animal Industry will fail of its purpose, or it will expend money without adequate results, unless there is some well devised adjustment of animal or stock oversight, and such unification in guarding a common interest as will not leave one State half helpless in its well devised methods, because in another State every one does that which is wrong or right in his own sight. This getting of exposed cattle over the borders of States must be stopped, but it cannot be stopped so long as the farmer of easy conscience, the innocent but unsuspecting dealer, or the reckless buyer with no conscience at all, are satisfied to believe that the best place for their troublesome herds is with some one else.

It is high time that the General Government should consider what is possible, what is feasible, and what is essential in view of the spreading progress of those diseases, and of the inability of one State to protect itself from the ruinous incursions from another State, unrestrained by any code or enforcement of inter-State regulation. Any system initiated by a single State is liable to be contested as an interference with inter-State traffic, while the General Government might easily settle what regulations are due in times of spreading pestilence, or the measures necessary to prevent it.

NEAT CATTLE QUARANTINE REGULATIONS.

In order that those interested in the importation of cattle may have the benefit of the rules and regulations governing this subject, the following circulars, issued by the Secretary of the Treasury previous to the transfer of the quarantine stations to the control of the Commissioner of Agriculture, and those since issued by the Commissioner of Agriculture, are given below:

[Circular.—Importation of neat cattle.]

TREASURY DEPARTMENT, *Washington, D. C., July* 19, 1879.

To collectors of customs and others:

The order of the 26th of February last, prohibiting the importation of neat cattle from England, is revoked.

By authority of section 2493 of the Revised Statutes, it is ordered: That the operation of the first clause of that section, which prohibits the importation of neat cattle from any foreign country into the United States, be suspended as to all ports of Europe, the Secretary having officially determined that such importation will not tend to the introduction or spread of contagious or infectious diseases among the cattle of the United States: *Provided,* That all neat cattle from any port of Europe arriving at any port of the United States shall be kept in quarantine for not less than ninety days, under the direction of the customs officers, and at the expense of the parties interested, except when State or municipal laws provide for the quarantine of such cattle, and in such cases collectors will permit the proper officers to quarantine them in such manner as the State or municipal authorities require.

The Department will, upon application, consider special cases where it may be claimed, during such quarantine, that the cattle came from entirely healthy localities direct to the United States, and will decide in such cases whether they may be delivered at a period shorter than ninety days before mentioned.

In any case where, during quarantine not under control of State or municipal authorities, the animals shall exhibit evidence of infectious or contagious disease, the facts will be reported to the Department for instructions.

H. F. FRENCH,
Acting Secretary.

[Circular.—Prohibiting importation of neat cattle from Canada.]

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
Washington, D. C., November 3, 1879.

To collectors and other officers of the customs:

To aid in preventing the introduction into the United States of contagious diseases among cattle, it is hereby ordered that, in pursuance of the authority contained in section 2493 of the Revised Statutes, the importation of neat cattle from the Dominion of Canada is prohibited until otherwise directed.

This order will take effect on the 1st of December next.

By order of the Secretary:

H. F. FRENCH,
Assistant Secretary.

[Circular.—Importation of neat cattle.]

TREASURY DEPARTMENT, *Washington, D. C., December* 27, 1879.

To collectors of customs and others:

The circular published in decision No. 4104, of July 19, 1879, provided as follows: "That all neat-cattle from any port of Europe, arriving at any port of the United States, shall be kept in quarantine for not less than ninety days, under the direction of the customs officers and at the expense of the parties interested, except when State or municipal laws provide for the quarantine of such cattle, and in such cases collectors will permit the proper officers to quarantine them in such manner as the State or municipal authorities require."

Collectors of customs are hereby instructed that in all cases a quarantine of not less than ninety days shall be enforced, including any term during which such cattle shall be quarantined under State or municipal authority.

Cattle from Australia and New Zealand will be regarded as embraced within order No. 4104, as hereby amended.

H. F. FRENCH,
Assistant Secretary.

[Circular.—Importation of neat cattle.]

TREASURY DEPARTMENT, *Washington, D. C., February* 26, 1880.

To collectors of customs and others:

It appearing to this Department that, by an order in council of the Dominion of Canada, of the 4th of October, 1879, all neat cattle coming from Europe are subjected, on entering the ports of Quebec, Halifax, and Saint John, to a quarantine of ninety days, the order of November 3, 1879, prohibiting the importation of neat cattle from the Dominion of Canada is revoked.

By authority of section 2493 of the Revised Statutes, it is ordered that the operation of the first clause of that section, which prohibits the importation of neat cattle from any foreign country into the United States, be suspended as to the Dominion of Canada, the Secretary having officially determined that such importation will not tend to the introduction or spread of any infectious or contagious disease among the cattle of the United States.

This order will take effect on March 1, 1880.

By order:

H. F. FRENCH,
Assistant Secretary.

[Circular.—Exportation of cattle to Great Britain.]

TREASURY DEPARTMENT, *Washington, D. C., March* 18, 1880.

To collectors of customs and others:

The Department's circular order of February 1, 1879, requiring the inspection of neat cattle with reference to the question whether they were free from contagious diseases, is hereby revoked.

That order was issued upon information that an inspection and certificate by our officers might prevent the United States from being included in the order of the Government of Great Britain that cattle from certain countries must be slaughtered at the ports of that country within ten days from arrival. By an order of the privy council of Great Britain cattle from the United States are now included in the above-named order, and are required to be thus slaughtered.

Hereafter, therefore, inspection of cattle shipped from the ports of the United States will not be made compulsory, but inspection may be made upon request of the shippers and at their expense under Order No. 139, of December 18, 1878, and the regulations and instructions now in force.

Collectors of customs are requested to forward to this Department any information which they may be able to obtain of the presence of pleuro-pneumonia or other contagious or infectious diseases prevailing among neat cattle in their vicinity.

By order:

H. F. FRENCH,
Assistant Secretary.

[Circular.—Quarantine of cattle.]

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
Washington, D. C., July 16, 1881.

To collectors of customs and others:

Circular No. 179, of December 27, 1879, which requires a quarantine of neat cattle imported from Europe, Australia, and New Zealand, is amended by adding thereto the following:

Neat cattle imported from the countries named may be quarantined at any place which, in the opinion of the collector, may be suitable, and to which they can be transported from the importing vessel at the port of arrival to such place of quarantine by another vessel without further transfer.

An inspector will be required to accompany such cattle to the place of quarantine at the expense of the parties.

H. F. FRENCH,
Assistant Secretary.

[Circular.—Regulations governing the treatment and quarantine of imported cattle.]

TREASURY DEPARTMENT, *Washington, D. C., June* 8, 1883.

To collectors and other officers of the customs:

(1) All cattle arriving in the United States from Europe, Asia, Africa, Australia, or New Zealand, shall be subjected to a quarantine of ninety days, counting from the date of shipment.

It shall be the duty of the veterinary inspector at each port to see that the cattle imported shall be securely guarded against the risk of transmitting or receiving contagion until they shall have entered the quarantine grounds, and all imported cattle shall be under his control from the time of landing until they reach the quarantine grounds. He shall also be superintendent of the quarantine, and shall have charge of the grounds, buildings, yards, and all property thereto belonging.

Collectors of customs are requested to co-operate with the veterinary inspectors and health authorities in enforcing these regulations, and will take such action as the facts and regulations may require.

(2) Imported cattle shall be examined by the Government veterinary inspector before they leave the wharves, and if any are there found to be suffering from any of the following diseases—lung plague, rinderpest, aphthous (eczematous) fever—they shall not be admitted to the established quarantine grounds, but shall be quarantined elsewhere, at the expense of the importer, or be dealt with in such other manner as the veterinary inspector, in co-operation with the State or municipal authorities shall determine.

(3) In case of imported animals proving to be thus infected, such portions of the cargo of the vessel as have been exposed to the cattle or their emanations shall be subjected, under the direction of an inspector, to fumigation with gas from burning sulphur, or to such other disinfection as may be considered by the veterinary inspector of the port necessary before they can be landed.

(4) No litter, fodder, or other aliment, nor any ropes, straps, chains, girths, blankets, poles, buckets, or other things used for or about the animals, and no manure shall be landed, excepting under such regulations as the veterinary inspector shall provide.

(5) On moving cattle from the ocean steamer to the quarantine grounds, they shall not be unnecessarily passed over any highway, but must be placed on the cars at the wharves or removed to the cars on a boat which is not used for conveying other cattle. If such boat has carried sheep, goats, or swine within three months antecedent, it must be first cleansed and then disinfected under the supervision of the veterinary inspector, and after the conveyance of the imported cattle the boat shall be disinfected in the same manner before it can be again used for the conveyance of cattle. The expense of such disinfection shall be paid by the United States. When passage across or upon a public highway is unavoidable in the transportation of imported cattle from the place of landing to the quarantine grounds, it must be under such careful supervision and restrictions as the veterinary inspector may, in special cases, direct.

(6) The banks or chutes used for loading and unloading imported cattle shall be reserved for such animals or shall be cleansed and disinfected, as above, before and after being used for such imported cattle.

(7) The railway cars used in the transportation of cattle to the quarantine grounds shall either be cars reserved for this exclusive use or box cars not otherwise employed in the transportation of meat animals or their fresh products, and after each journey with cattle to the quarantine grounds they shall be disinfected by thorough

cleansing and disinfecting under the direction of the Government veterinary inspector. The charge of such disinfection shall be paid by the United States.

(8) While cattle are arriving at the quarantine stations, or leaving them, all quarantined stock in the yards adjoining the alley ways through which they must pass shall be rigidly confined to their sheds.

(9) Cattle arriving by the same ship may be quarantined together in one yard and shed, but those coming on different ships shall, in all cases, be placed in separate yards.

(10) The gates of all yards shall be kept locked, except when cattle are entering or leaving quarantine.

(11) The attendants on cattle in particular yards are forbidden to enter other yards and buildings, except such as are occupied by stock of the same shipment with those under their special care. No dogs, cats, or other animals, except those necessarily present shall be allowed in the quarantine grounds.

(12) The allotment of yards shall be under the direction of the veterinary inspector of the port, who shall keep a register of the cattle entered, with description, name of owner, name of vessel in which imported, date of arrival and release, and other important particulars.

(13) The veterinary inspector shall see that water is regularly furnished to the stock, and the manure removed daily, and that the prescribed rules of the station are enforced.

(14) Food and attendance must be provided by the owners of the stock quarantined. Employés of such owners shall keep the sheds and yards clean, to the satisfaction of the veterinary inspector.

(15) "Smoking" is strictly forbidden within any quarantine inclosure.

(16) No visitor shall be admitted to the quarantine station without special written permission from the collector of customs of the port, the veterinary inspector, or a member of the Treasury Cattle Commission. Butchers, cattle-dealers, and their employés are especially excluded.

(17) No public sale shall be allowed within the quarantine grounds.

(18) The inspector shall, in his daily rounds, so far as possible, take the temperature of each animal, commencing with the herds that have been longest in quarantine, and ending with the most recent arrivals, and shall record such temperatures on lists kept for the purpose. In passing from one herd to another he shall invariably wash his thermometer and hands in a weak solution (1 to 100) of carbolic acid.

(19) In case of the appearance of any disease that is diagnosed to be of a contagious nature, the veterinary inspector shall notify the chairman or other professional member of the Treasury Cattle Commission, who shall visit the station personally or send a delegate, and on the confirmation of the diagnosis, the herd shall be disposed of according to the gravity of the affection.

(20) If the disease should prove to be one of the exotic plagues—lung plague or rinderpest—the animals shall be dealt with in such manner as the veterinary inspector, in co-operation with the State or municipal authorities, shall determine.

(21) The yard and shed in which such disease shall have appeared shall be subjected to a thorough disinfection. Litter and fodder shall be burned. Sheds, utensils, and other appliances shall be disinfected as the veterinary inspector may direct. The yard fence and manure-box shall be freely sprinkled with a strong solution of chloride of lime. The flooring of the shed shall be lifted, and the whole shall be left open to the air, and unoccupied for three months.

(22) If the contagious disease shall prove to be aphthous fever, anthrax, Texas fever, cow-pox, diphtheria, or scabies, the infected herd shall be rigidly confined to its shed, where disinfectants shall be freely used, and the attendants shall be forbidden all intercourse with the attendants in other yards, and with persons outside the quarantine grounds.

CHAS. J. FOLGER,
Secretary.

[Circular.—Importation of neat cattle.]

TREASURY DEPARTMENT, *Washington, D. C., July* 30, 1883.

To collectors of customs and others:

Sections 2493 and 2495 of the Revised Statutes, re-enacted in the act approved March 3, 1883, as sections 2494 and 2495, respectively (p. 6, T. I., new), provide as follows:

"SEC. 2494. The importation of neat cattle and the hides of neat cattle from any foreign country into the United States is prohibited: *Provided,* That the operation of this section shall be suspended as to any foreign country or countries, or any parts of such country or countries, whenever the Secretary of the Treasury shall officially de-

termine, and give public notice thereof, that such importation will not tend to the introduction or spread of contagious or infectious diseases among the cattle of the United States; and the Secretary of the Treasury is hereby authorized and empowered, and it shall be his duty, to make all necessary orders and regulations to carry this law into effect, or to suspend the same as therein provided, and to send copies thereof to the proper officers of the United States, and to such officers or agents of the United States in foreign countries as he shall judge necessary.

"SEC. 2495. Any person convicted of a willful violation of any of the provisions of the preceding section shall be fined not exceeding five hundred dollars, or imprisoned not exceeding one year, or both, in the discretion of the court."

An act of March 3, 1883, page 613, statutes of second session of Forty-seventh Congress, makes the following appropriation:

"To enable the Secretary of the Treasury to co-operate with State and municipal authorities and corporations and persons engaged in the transportation of neat cattle by land or water in establishing regulations for the safe conveyance of such cattle from the interior to the seaboard, and the shipment thereof, so that such cattle may not be exposed to the disease known as pleuro-pneumonia or lung plague, and to prevent the spread of said disease and to establish quarantine stations, and provide proper shelter for neat cattle imported, at such ports as he may deem necessary, $50,000."

Although sections 2494 and 2495 of the Revised Statutes as incorporated in the act of March 3, 1883, are not materially changed, they have the force of new law, and the Secretary of the Treasury, by virtue thereof, hereby gives public notice that he has officially determined that the importation of neat cattle, subject to the conditions hereinafter prescribed, will not tend to the introduction or spread of contagious or infectious diseases among the cattle of the United States. The operations of the sections of the law prohibiting the importation of neat cattle and the hides of neat cattle into the United States are therefore suspended, but upon the condition that importers and owners of neat cattle shall submit to and abide by such orders and regulations as the Secretary of the Treasury has prescribed, or may from time to time prescribe to carry the above laws into effect. All the existing orders of the Department under the sections which have been revised will remain in force under the present provisions, except as herein modified.

All neat cattle arriving in the United States from any part of the world, except North and South America, will be subjected to a quarantine of ninety days, counting from the date of shipment. As the Dominion of Canada maintains quarantine for all imported cattle, no quarantine for cattle imported from Canada is provided.

For general information, it is deemed proper to state that permanent arrangements have been completed for quarantine accommodations of imported cattle as follows: At Dearing, for Portland, Me., for about 215 head; at Waltham, for Boston, Mass., for about 300 head; at Garfield, N. J., for New York, for about 450 head; and at Baltimore, Md., for about 350 head, full grown animals, and that these arrangements will be extended as may be deemed necessary.

As each importation is kept isolated from all others, full numbers cannot always be accommodated, while larger numbers than the above estimates of small animals may be received.

It is obviously impossible to provide at each port for all the cattle that may be imported into the whole country, and all will see the necessity of using the accommodations, where not only shelter is provided at large expense, but veterinary inspectors or custodians are employed at annual salaries.

Experience already shows that importers have preferences as to the place of quarantine, so that the station at one port is full while that at another is nearly empty.

Importers of cattle, therefore, in order to secure accommodations at the port where the cattle are imported, should give notice to the collector of the expected importation, so as to secure quarantine accommodations, which will be provided in the order in which notice thereof is given. If, owing to lack of accommodations, cattle cannot be quarantined at the port where they arrive, they will be transferred at the expense of the importer to some other quarantine station where sufficient accommodations do exist, preference being given to stations where there is no danger of infection. Where there are more cattle for quarantine than the regular Government stations can accommodate, special arrangements for quarantine outside the stations may be made by the collector of the port where they arrive, upon consultation with the cattle commission or the superintendent in charge. The order by which importers have been allowed to quarantine cattle at such points as they might select, where cattle could be transported by water, is rescinded, and all imported cattle will be quarantined at the Government stations, except as above provided.

Consular officers abroad to whom this circular may be sent are requested to bring its contents to the notice of shippers of cattle, so that they may be fully informed of the regulations of this Department upon the subject before making shipments.

H. F. FRENCH,
Acting Secretary.

[Circular.—Report of United States Treasury Cattle Commission relative to the foot-and-mouth disease.]

TREASURY DEPARTMENT, *Washington, D. C., August* 4, 1883.

To collectors of customs and others:

A resolution having been adopted by the British House of Commons opposing the importation into Great Britain of cattle from any country in which the foot-and-mouth disease prevails, and charges having been made in parliament that such disease prevails in this country, an investigation has been made by the United States Treasury Cattle Commissioners, who find that there is no evidence that American herds are now suffering from the disease. The report of the Commissioners is hereto appended.

Should you at any time learn of the existence of such disease in this country, you will please inform this Department of the particulars without delay.

H. F. FRENCH,
Acting Secretary

UNITED STATES TREASURY CATTLE COMMISSION,
Boston, Mass., July 21, 1883.

SIR: Charges having been recently made in the British Parliament that cattle were being shipped from our ports infected with the foot-and-mouth disease, and a majority of the House of Commons having voted for a resolution opposing the importation into Great Britain of cattle from any country in which said disease exists, we feel it our duty to state the facts of the case so far as this country is concerned.

After a most extended and almost exhaustive inquiry, your Commission have been able to find no trace of foot-and-mouth disease apart from herds just landed from Great Britain, and which herds have been in every case segregated until the infection has entirely disappeared. The nature and scope of our inquiry may be deduced from our report for 1881. Beginning with the great rendezvous of cattle at Kansas City, Council Bluffs, and Omaha, we have made careful investigations along all the lines of cattle traffic as far as the Eastern seaboard. In this investigation we have included all the great stock-yards where cattle are detained for feeding, watering, sale, &c.; all the great feeding stables connected with distilleries, and starch, glucose, and other factories; all the city dairies where stock-yards exist, and where the herds are replenished from such stock-yards, and to a large extent the great dairying districts, into which cows are drawn from the above-named stock-yards and lines of travel. Up to the present date we have made observations in the stock-yards at the seaboard, the terminal end of our cattle traffic, and that to which all infection must gravitate, but, apart from the imported cases above referred to, we have been unable to find a single case of the foot-and-mouth disease complained of.

The significance of the entire absence of this disease along the whole line of our cattle traffic and in the herds into which this traffic leads can be only appreciated when considered in its relation to the nature of the disease and the unmistakable symptoms by which it is manifested. The following points are especially to be noted:

(1) The foot-and-mouth disease is perhaps the most contagious malady known. It rarely enters a herd without striking down all the members of that herd simultaneously, or nearly so.

(2) The susceptibility to the disease is all but universal on the part of warm-blooded animals, but all cloven-footed animals are especially and about equally predisposed to it. It cannot be overlooked nor covered up, therefore, as can a disease which confines its ravages to a single genus, but sheep, goats, and swine, coming within the range of the infection, contract and manifest the disease as readily and in as marked a way as do cattle.

(3) The period of latency on incubation is remarkably short, the eruption of the malady often taking place in thirty-six hours, and rarely being delayed, even in cold weather, beyond six days after exposure to infection. There is, therefore, no opportunity for concealment nor for the disposal of the infected but still apparently sound animals, while a journey of four or six days from the West, with the attendant privations and febrile excitement, would infallibly determine the full eruption of the disease before the stock arrived at the Eastern seaboard, and this although the infection had only been received after the shipment on the cars.

(4) The manifestation of the disease is not only so universal in the herd affected, but so prominent and unmistakable that it could not possibly be overlooked. No one could ignore for a moment the swollen digits, the lameness, and the blisters and ulcers between the hoofs; the heat, tenderness, swelling, and blisters or raw sores on the udder and teats, and the abundant frothing and slobbering at the mouth; the frequent loud, smacking noise made with the tongue and palate, and the large round blisters or red, angry sores on the mucous membrane of the mouth. These cannot

escape the attention of the owners and attendants, and especially when a whole herd of 10, 50, or 100 are suffering simultaneously, much less can they escape the instructed eye of the professional veterinarian.

In this connection it may be well to state that the invasion of foot-and-mouth disease that swept from Canada over Northern New York and New England in 1871 created something closely approaching a panic. The agricultural papers were full of the subject, State boards of agriculture convened and discussed the subject, a convention of delegates from different States met at Albany, N. Y., and it was the engrossing theme for every local farmers' club along the line of infection. This invasion, imported into Montreal with two English cows, fortunately occurred in autumn, and the long seclusion of the herds during the ensuing winter virtually stamped it out, the infection not having extended beyond herds in inclosed pasturages or buildings. Most of our farmers are as ignorant of the disease to-day as they were in 1871, and any new invasion could not fail to produce a similar excitement and consternation.

It should be added that our connection with the States, as well as the United States, brings us constant complaints of diseases supposed to be contagious, but we have not found any evidence of the actual existence of the foot-and-mouth disease at any point among our home herds.

We cannot pass unnoticed the two latest importations of the disease from England. Two years ago the steamship France, of the National Line, landed in New York a herd of Channel Island cattle suffering from foot-and-mouth disease. These were quarantined by the State authorities, and the infection stamped out. The France, however, after an attempted disinfection, shipped a cargo of American beeves for the return voyage, and these, on arrival in England were condemned as being infected with foot-and-mouth disease. This was undoubtedly contracted on board of ship. The second case is that of the steamship Nessmore, which, in March, 1883, landed in Baltimore a herd of Channel Island cattle suffering from foot-and-mouth disease. These again were secluded, as soon as detected, by the Pennsylvania authorities, and no evil consequences to our home herds can be traced. But the steamship Nessmore, after an attempted disinfection by the agents, shipped a cargo of American fat cattle, and these, on arrival in England, were found to be suffering from foot-and-mouth disease. This infection, unquestionably contracted on board ship, appears to have been the main, if not the sole, occasion of the recent questions and resolution in the British Parliament. That the infection was not derived from American herds, but from English, is beyond all dispute, alike in this case and in that of the France two years ago. The same is true of our extensive invasion in 1871, which was derived from two imported shorthorn cows, and which was thoroughly extinguished without having gained any permanent foothold.

We do not deny that other cargoes of American cattle may have been found suffering from the disease in question on arrival in England, but this is amply accounted for by the occasional use, for these cattle, of head-ropes and other appliances that have been previously used for European cattle. But on this point we insist, with the greatest confidence, that there is no evidence whatever that our American herds are now suffering from foot-and-mouth disease, and that that there is as strong evidence of its non-existence as can well be produced on the negative side of the question.

JAMES LAW,
E. F. THAYER,
United States Treasury Cattle Commissioners.

HON. C. J. FOLGER,
Secretary of the Treasury.

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
Washington, D. C., August 21, 1883.

SIR: I inclose for your consideration a request from Mr. William Koch that the Secretary of the Treasury will permit 6 head of Swiss cattle, now in quarantine at Garfield, to be transferred to the owner's farm on Staten Island.

Similar requests have been received for the transfer of cattle from the quarantine station at Waltham, Mass., near Boston, to the farms of the owners in Vermont. Such requests are frequent, and it is quite natural that each importer of cattle should desire that his herd be excepted from the general rule requiring that imported cattle be kept in quarantine ninety days from the day of shipment. Each importer is sure that he can provide for his own stock cheaper and better than the Government can provide for them, and he is equally sure that his cattle are free from infection, and that he can keep them so better than the Government can. At every meeting, however, of the breeders and dealers in cattle, all agree that the quarantine system should be maintained, and Congress has provided for its maintenance. The system is new, and its inauguration is attended with many embarrassments. The amount of money ap-

propriated for the purpose is limited, and importers inconsiderately bring their cattle into port with little or no notice of approach. During the present season two or three times as many cattle have been imported as could have been reasonably expected from the importations of former seasons. It is evident that this system cannot be administered by making exceptions to the general rules, unless such exceptions are imperatively demanded.

By Department circular of July 30, 1883, it is provided that "where there are more cattle for quarantine than the regular Government stations can accommodate, special arrangements for quarantine outside of the stations may be made by the collector of the port when they arrive, upon consultation with the Cattle Commission or the superintendent in charge." You will observe that the responsibility in this matter rests upon the collector of the port in whose immediate custody the quarantine stations and the cattle therein are placed.

While it is desired that the collector shall be in constant communication with the Cattle Commission, and that he should act in harmony with their views, they will not assume to make orders with regard to the cattle; and this Department will issue no instructions respecting the quarantining of cattle, or for their transfer from one station to another or to any other place, except through the collector of the port. Where stations are crowded, the Department will rely upon the collectors at the respective ports to make such special arrangements for quarantining cattle outside of the stations as the circumstances of each case shall seem to require, holding itself always ready to advice the collectors should they request advice upon the subject.

A copy of this letter will be transmitted to Mr. Koch, and such other persons as have made or shall hereafter make application for quarantine accommodations for their cattle outside the regular stations.

Very respectfully,

H. F. FRENCH,
Acting Secretary.

COLLECTOR OF CUSTOMS, *New York, N. Y.*

[Circular.—Importation of neat cattle.]

TREASURY DEPARTMENT, *Washington, D. C., June* 18, 1884.

To collectors of customs and others:

The following conditions for the observance of importers and owners of neat cattle and others are prescribed, in addition to those now in force under Department's circular of July 30, 1883, No. 104, to take effect August 1, 1884:

Neat cattle arriving in the United States from any part of the world, except North and South America, can be landed only at such ports on the Atlantic seaboard as are at the time provided with cattle quarantine stations under the control of Treasury officers.

Any person contemplating the importation of such cattle must first obtain a permit from the Treasury Department, stating the number and kind of animals to be imported, the port at which said cattle are to be landed and quarantined, and the approximate date of their arrival; and this permit shall secure the reception of the number and kind of animals specified therein at the port and quarantine station named, at the date prescribed for their arrival, or at any time during three weeks immediately following, after which the permit shall be void.

Such permit shall in no case be available at any port other than the one mentioned therein.

Permits will be issued to quarantine at such ports as the importer may elect, so far as facilities exist at such port, but in no case will permits for importation at any port be granted in excess of the accommodations of the Government quarantine station at such port.

Every importer shall, on the day of shipment from a foreign port, telegraph to the Secretary of the Treasury the number of cattle shipped, the vessel upon which they are shipped, and the port at which they are to be landed.

United States consuls at foreign ports are hereby notified to give clearance papers or certificates for importations of cattle only upon presentation of permits as above provided, with dates of probable arrival and destination corresponding with the said permits, and in no case for a number in excess of that mentioned therein.

The ports now provided with quarantine stations under the control of the Treasury Department, and at which cattle may be landed, subject to the foregoing conditions, are Portland, Boston, New York, and Baltimore.

CHAS. J. FOLGER,
Secretary.

[Circular.—Quarantine of imported neat cattle.]

TREASURY DEPARTMENT, *Washington, D. C., July* 25, 1884.

To collectors and other officers of the customs:

The act approved July 7, 1884, making appropriations for sundry civil expenses of the Government for the fiscal year ending June 30, 1885, contains the following provision:

"To establish and maintain quarantine stations, and provide proper shelter for and care of neat cattle imported at such ports as may be deemed necessary, $25,000, to be expended by the Commissioner of Agriculture under the general supervision of the Secretary of the Treasury."

The law transfers to the Department of Agriculture the expenditure of said appropriation, subject to the general supervision of this Department, and necessarily the making of rules and regulations governing the quarantine of imported neat cattle.

After, therefore, the proper permit has been issued, the cattle will be placed in charge of an officer of the Department of Agriculture for quarantine, who will act in concert with customs officers. The cattle will be released from quarantine only on a permit issued under authority of the Agricultural Department.

All correspondence on the part of customs officers in connection with such quarantine will hereafter be had with the Agricultural Department.

CHAS. E. COON,
Acting Secretary.

[Circular.—Importation of neat cattle.]

DEPARTMENT OF AGRICULTURE, *Washington, D. C., August* 25, 1884.

To collectors of customs and others:

The following conditions for the observance of importers and owners of neat cattle and others are prescribed by the Department of Agriculture, to which the quarantine system has been transferred by the Secretary of the Treasury with instructions that "hereafter all regulations governing such quarantine will be issued by the Commissioner of Agriculture."

Neat-cattle arriving in the United States from any part of the world, except North and South America, can be landed only at such ports on the Atlantic seaboard as are at that time provided with cattle quarantine accommodations under the control of officers of the Department of Agriculture.

Any person contemplating the importation of such cattle must first obtain from the Department of Agriculture at Washington two permits, one stating the number and kind of animals to be imported, the port, and probable date, of shipment, which will entitle them to clearance papers on presentation to American consul at said port of shipment; the other stating the port at which said cattle are to be landed and quarantined, and the approximate date of their arrival, and this will assure the reception of the number and kind specified therein at the port and quarantine station named, at the date prescribed for their arrival, or at any time during three weeks immediately following, after which the permit will be void

These shall in no case be available at any ports other than the ones mentioned therein. Permits must be in the name of the owner of, or agent for, any one lot of cattle. When more persons than one own a lot of cattle for which permits have been issued, a release from quarantine will be given to each owner for the number and kind he may own, and this release will be a certificate of fulfillment of quarantine regulations.

Permits will be issued to quarantine at such ports as the importer may elect, so far as facilities exist at such port, but in no case will permits for importation at any port be granted in excess of the accommodations of the Government quarantine at such port.

Every importer shall, on the day of the shipment from a foreign port, telegraph to the Commissioner of Agriculture the number of cattle shipped, the vessel on which they are shipped, and the port at which they are to be landed.

United States consuls at foreign ports are hereby notified to give clearance papers or certificates for importation of cattle only upon presentation of permits as above provided, with dates of probable arrival and destination, corresponding with said permits, and in no case for a number in excess of that mentioned therein.

The ports now provided with quarantine stations under control of the Treasury Department, and at which cattle may be landed subject to the foregoing conditions, are Portland, Boston, New York, Baltimore, and such additional ports as may be provided with quarantine accommodations approved by the Commissioner of Agriculture and supervised by the proper officers.

GEO. B. LORING,
Commissioner of Agriculture.

Approved.

CHAS. E. COON,
Acting Secretary of the Treasury.

[Order abolishing and establishing neat cattle quarantine stations.]

DEPARTMENT OF AGRICULTURE, UNITED STATES CATTLE QUARANTINE,
Washington, D C., July 1, 1885.

To whom it may concern:

The neat cattle quarantine stations at Portland, Me., Coopersburg and Chester, Pa., and New Orleans, La., are hereby abolished.

A station has this day been established at San Francisco, Cal., for the proper quarantining of all cattle imported by residents of the Pacific coast.

NORMAN J. COLMAN,
Commissioner of Agriculture.

[Order for removal of Waltham neat cattle quarantine station.]

DEPARTMENT OF AGRICULTURE, UNITED STATES CATTLE QUARANTINE,
Washington, D. C., October 1, 1885.

To whom it may concern:

The neat cattle quarantine station heretofore existing at Waltham, Mass., has this day been ordered removed to Littleton, Mass., on the Fitchburg Railroad, and will hereafter be known as the Littleton Neat Cattle Quarantine Station.

NORMAN J. COLMAN,
Commissioner of Agriculture.

ITEMS OF INTEREST FROM CORRESPONDENTS.

EARLY LEGISLATION FOR THE PREVENTION OF SOUTHERN CATTLE FEVER.

Mr. B. F. Grady, of Albertson, Duplin County, North Carolina, writing under date of May 30 last, says:

In report on "Contagious diseases of swine and other domestic animals, 1880," p. 98, it is hoped that historical documents containing accounts, &c., may be hunted up. The "Laws of the State of North Carolina, by Potter, Taylor & Yancey," 2 volumes, published in 1821, quotes an act of the legislature of 1766, chapter 81, as follows: "To prevent the inhabitants of South Carolina from driving cattle to range and feed in this province," &c. Section 4 says: "Whereas much loss or damage has often ensued to the inhabitants of this province from distempered cattle being drove through the same: For remedy whereof, &c., no person or persons whosoever shall drive any cattle into this province, or from any county to another without having a certificate, &c., that the cattle were sound, &c.; within 5 miles of the place whence they came."

In 1795, chapter 439: "Whereas it is found by experience that such certificate (as required in the previous act) is insufficient: For remedy, &c., no person whoever shall hereafter drive any cattle into North Carolina between April 1 and November 1, from either South Carolina or Georgia."

"SEC. 2. No person shall hereafter drive any cattle from those parts of this State where the soil is *sandy*, and the natural product or growth of timber is the long-leafed pine, into or through any of the highland parts of the State where the soil or growth of timber is of a different kind, between April 1 and November 1; nor shall any person hereafter within the said time drive any cattle from the highland parts of the State into those parts where the long-leafed pine is the natural growth," &c.

HEAVY LOSS BY SOUTHERN CATTLE FEVER.

Mr. Thomas S. Bugher, of Kansas City, Mo., writes as follows to the Chief of the Bureau of Animal Industry, under date of June 15 last, concerning losses of ranch cattle caused by an outbreak of Southern cattle fever:

In reply to yours of the 11th instant, in reference to an interview you had with Major Towers in regard to losses by Texas fever caused by crossing the Texas cattle trail in the Indian Territory in October, 1884, I would state that the herd referred to left Drum & Snider's ranch, on Cherokee Strip, about October 14, and crossed the Texas cattle trail about the 21st of the same month. They were on the main trail about two days. They commenced getting sick in about six days after they struck the trail, and within two days after the disease appeared over 100 animals had died. On every bed ground they made until they stopped the cattle they left from 40 to 80 dead animals. They got so bad that our foreman had to turn the cattle loose about 75 miles from our ranch, which is situated on Red River, in Hall County, Texas. About 800 head of the 2,200 in the herd died last fall, and about one-half of those remaining got sick and became very poor, and I think most of them died during the winter. We have not been able so far to gather but about 650 head of the herd. This herd of cattle was highly improved, which seemed to make the disease more fatal. We had 80 head of thoroughbred and high-grade shorthorn bulls in the herd, all but two of which died last fall. I think our losses, at a low estimate, will figure up to $35,000. We had had two very heavy frosts before these cattle crossed the trail. We (the same firm) lost in June, 1883, by crossing the Texas trail, 270 head of three and four year old improved steers, valued at $10,000.

SOUTHERN CATTLE FEVER AT SPRINGFIELD, MO.

Under date of January 8, 1885, Dr. M. R. Trumbower gives the following account of an outbreak of Southern cattle fever at Springfield, Mo.:

Mr. William H. Finch, who kills beeves for the local butchers, and is the proprietor of a rendering establishment for disposal of dead carcasses in and around Springfield, informed me that he had carted from old Springfield and from the north side over 100 head of cattle which had died with Texas fever during the past summer and fall, but that nearly all of them were cows which were owned by individuals residing in the second and third wards of the city; that nearly all the cattle kept in these wards grazed more or less on small commons adjoining the cattle yards of the Kansas City, Fort Scott and Gulf Railroad.

I called to see the superintendent of the stock-yards, but found him absent from home. I then called on Mr. James Morgan, the assistant superintendent. He said that 1,000 head of cattle, shipped from Memphis, Tenn., supposed to be Alabama cattle, were unloaded at their yards in the latter part of April, 1884, for feed and rest; 52 were dead in the cars when they arrived; they were billed in the name of Mr. Baer.

In the early part of May, 1884, 980 head were unloaded and allowed to graze over night on the commons adjoining the yards. These were billed in the name of Boot, Smith & Co., from Little Rock, Ark.; their supposed destination was Montana Territory. Only 1 of this number (980) was dead on arrival at Springfield. Mr. Morgan further stated: "More or less of the town cows grazing around the yards have died annually."

I saw Dr. H. E. Nearing, a veterinarian, who made a number of *post mortem* examinations during the past season of cows which died in the city. He found the "gall bladder full of thickened bile; the liver apparently healthy; the spleen of a small Jersey cow weighed at least 8 pounds; the urine bladder was always filled with dark-colored urine, sometimes possessing a greenish tinge; the tallow was very yellow; the fourth stomach slightly inflamed." His own cow died two weeks after the supervention of a heavy frost; the bodily temperature during her sickness was from 103° to 105° F.

SUPPRESSION OF PLEURO-PNEUMONIA IN NEW ZEALAND.

In May last the Department addressed a letter to Hon. Thomas T. Gamble, United States vice-counsel at Auckland, asking information as to the existence of contagious pleuro-pneumonia among cattle in New Zealand. It will be observed from the following reply to the letter of inquiry addressed to him that the disease has been extirpated in that colony:

UNITED STATES CONSULATE, *Auckland, New Zealand, August* 8, 1885.

SIR: I have the honor to acknowledge the receipt of your letter of May 19, and beg to say in reply that no contagious disease among domestic animals exists in any part of New Zealand. In 1880 pleuro-pneumonia made its appearance in some of the districts near Auckland, but was immediately reported to the Government. A veterinary surgeon was ordered to inspect these districts. He found that the disease had been brought from New South Wales by cattle recently imported. All infected cattle were killed under his supervision, and the herds with which they had mingled closely quarantined. Every trace of the disease was speedily stamped out.

By an "order in council," passed in 1883, the importation into New Zealand, from any part of the world, except the Australasian colonies, of all "cattle, sheep, horses, swine, dogs, and goats, and also of fresh meats, skin, hides, hair, horns, hoofs, offal, or other parts of such animals," has been strictly prohibited since the 1st of January, 1884.

I am, sir, your obedient servant,

THOS. T. GAMBLE,
Vice-Consul.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture, Washington, D. C.

The following is the order in council referred to by Mr. Gamble:

[Order in council.—At the Government House, at Wellington, this 20th day of August, 1883. Present, his excellency the governor in council.]

In pursuance of the powers and authorities vested in him by the sixtieth section of "the diseased cattle act, 1881," his excellency the governor of the colony of New Zealand, by and with the advice and consent of the executive council of the said colony, doth hereby absolutely prohibit the introduction into the colony of New Zealand from the countries following, that is to say, Europe, Asia, Africa, America, and the islands in the Atlantic, Pacific, and Indian Oceans, save and except the Australasian colonies, of all cattle, sheep, horses, swine, and goats, and also of fresh meats, skins, hides, hair, horns, hoofs, offal, or other parts of any such animal, and of all hay, straw, and fodder, and of all fittings which have been used in the transport of any such animal.

And, with the like advice and consent, doth declare that this order in council shall come into force from and after the date hereof: Provided that this order in council shall not apply to animals which shall have been shipped from any of the above-mentioned countries before the 1st day of December, 1883.

FOSTER GORING,
Clerk of the Executive Council.

TOBACCO FOR INTERNAL PARASITES OF HOGS.

The following interesting letter from Dr. W. S. D. Johnson, has been referred to the Department of Agriculture by Hon. W. H. Hatch, to whom it was addressed. Colonel Hatch states that he has tried this infusion of tobacco in an outbreak of disease in his own herd, with very successful results, and that many owners of swine in Missouri have been equally benefited by it.

LA BELLE, MO., *January* 26, 1885.

DEAR SIR: You will remember that on the 12th day of May, 1884, you mailed to me a printed circular headed "The Tobacco Remedy," by General T. L. Clingman, the receipt of which I immediately acknowledged, and made a statement that came under my own observation as follows:

"In 1871, I came to this place bringing with me 118 head of hogs. Hog cholera made its appearance among them and they commenced dying, and in the course of six or seven weeks I lost 96 head. At this time I killed 4 on one day and made *post mortem* examinations very carefully, and found that these animals were dying from the ravages of other animals—animals within."

I then applied the tobacco remedy with success, but I did not give you the history of my observations and efforts to arrest the disease before resorting to the use of tobacco as a remedy, which I will now do, as best I can, after the expiration of thirteen years, although I have never made any pretensions to veterinary science or veterinary medicine.

In 1871, when my hogs commenced dying, I commenced trying to arrest the disease by giving them calomel, protiodide of mercury, black antimony, spirits of turpentine, and arsenious acid, each separately, with corn-meal gruel and in different quantities, with which I persevered for perhaps five or six weeks, during which time I learned that I could neither kill nor cure my sick hogs with these medicines, hence I determined to press an investigation and learn, if possible, what was the true pathology and the ætiology of this terrible scourge among the swine of our country.

I then took my rifle-gun and dissecting instruments and went to my pig lot, determined the disease should not kill all my hogs, and I killed one that was not too sick to eat corn. I opened it its entire length, and examined very carefully the lungs, liver, spleen, kidneys, heart, and tonsils, but failed to find any marks of inflammation or hyperæmia in either of the above-named organs, but discovered some little injection in some parts of the peritoneal coating of the small bowel, the jejunum and ileum, so I opened the bowel from the pylorus to the cæcum, and to my astonishment, when I had laid this part of the alimentary canal open, the whole secret of the disease was made manifest by seeing worms lying all along the entire course of the bowel, and had these worms been placed end to end there were enough to extend the entire length of the bowel opened.

These worms were of different lengths, varying from 1 to 6 inches or more, white and round, tapering from the middle towards the extremities, but with less taper towards the head, resembling the regular lumbricoides, except the head was yellow or yellowish-red, resembing that of the wood-worm that works under the barks of fallen trees.

The larger and, as I presume, the older of these worms, had commenced eating into the true coats of the bowel, and if let alone will perforate the bowel, after which the ingesta, more or less, will pass into the peritoneal cavity and produce peritonitis; then death of the hog is inevitable.

The smaller of these worms did not have a colored head; hence I am satisfied they must be just so old before their heads acquire that yellowish color I noticed on the larger ones.

Now, in this connection, I would say I took hold of the worms that had eaten into the coats of the bowel to pull them loose, but they stuck like a tick and would pull in two, leaving the head end sticking fast in the coats of the bowel.

I am of the opinion these worms are of zymotic origin, and that the zymosis takes place in the hog's alimentary canal, where they subsist on the chyle until they are full grown, at which time they begin to eat the animal substance of the bowel even to the extent of perforation, and hence the fatality of the so-called hog cholera.

The above is a report of the first hog I killed for *post mortem* examination, and on the same day I killed 3 others, and they were all alike, pathologically, in every particular.

Mr. John Staggs, living near Steffenville, of this county, with whom you are doubtless acquainted, reported to me a few days ago that hog cholera made its appearance in his herd in October last, and the first thing he knew of it he observed one large fat hog had died and another was sick. He opened the dead hog and found the bowels perforated in several places, and the food had passed into the peritoneal cavity, producing peritonitis, of which the hog had died.

He then made strong infusion of tobacco and gave to all the rest of his hogs, including the sick one; the sick hog recovered and none of the rest took sick, and here the disease ceased in his herd.

Having learned by actual observation that my hogs died and were dying of peritonitis, as the result of perforation of the small bowel by worms, and taking into consideration the fact that I had freely used spirits of turpentine and calomel in trying to arrest the disease and had failed, my mind was naturally turned towards a more powerful and effective anti-parasitic or anthelmintic, and by considering the anthelmintics respectively, and taking into consideration that the hog is not very easily poisoned, nicotine, one of the fifteen chemical elements of tobacco and the only one of that plant that is anti-parasitic, suggested itself as the one I might rely upon. I then resolved to give my hogs (after I had lost 96 head in 1871) tobacco infusion; but just at this point I saw an elephant in my path, in the form of a national law threatening to punish any man or men who would sell or give me a pound of tobacco, and that, too, in free America.

Had it not been for that prohibitory law I certainly would have made public the tobacco remedy for hog cholera years ago, by which, I think, millions of dollars' worth of pork would have been saved to the farmers of our common country, sufficient, perhaps, to have paid our national debt, but necessity being the mother of invention I procured the tobacco without money, without price, and without the knowledge of the man who raised it, and gave it to my hogs, which arrested that fearful malady that had plucked from my herd 96 head.

Doubtless many veterinary surgeons have made *post mortem* examinations of swine for the purpose of learning the ætiology and pathology of the so-called hog cholera, and perhaps the majority of them have failed or neglected to lay the small bowel open its entire length for investigation, while others have not thus failed to examine the small bowel, but have failed to make the needful discovery of the existence of internal parasites, but be this as it may, I have found the internal parasites in every instance on *post mortem* examination, and in this connection would say I have not known a single instance where the infusion of tobacco failed to arrest the disease in a herd of swine where it was used, nor to cure a sick hog when he was not too sick to drink the infusion. I do not believe much can be done for a hog when you have to coerce him, as nearly all of them will squeal in the operation, and the *velum pendulum palati*, in the squealing exercise, will allow the fluid to pass into the trachea, and the hogs will die of suffocation or asphyxia, so it is best to not attempt to force a fluid into a hog.

In order to explain how the tobacco infusion destroys the intestinal parasites of hogs, you will remember I stated above that these worms are of zymotic origin, and that the zymosis takes place in the alimentary canal, where they subsist on the chyle until they grow old and strong enough to do violence to the coats of the bowel, and when we administer the tobacco infusion it becomes mixed with the chyle, and when the worms drink of the chyle they get sufficient of the nicotine to destroy them, while it simply nauseates the hog, and sometimes will even vomit him; but I do not believe it will kill a hog, which makes tobacco an admirable remedy for the so-called hog cholera.

In reference to the older of these worms that have their heads buried in the bowel by eating and have ceased to drink of the chyle, the tobacco infusion, coming in con-

tact with its body, acts on the worm by *endosmose*, and will destroy him also, so there is no escape for these parasites when the tobacco infusion is administered internally.

I would state, in this connection, that nicotine, in its concentrated form, is one of the most deadly poisons known, but the infusion of tobacco, containing all the chemical elements of tobacco, in its action on the animal system, is narcotic, anti-spasmodic, nauseant, sedative, and anodyne, and when applied topically, to a local inflammation, it acts as a local anæsthesia, and hence I am induced to believe a tobacco poultice applied to the wound in case of traumatic tetanus (lock-jaw) would be of great service in that dreadful disease of the human subject, which action is by endosmose.

To prepare the infusion of tobacco for hog cholera, take of tobocco leaf 1 pound, place it in a vessel with a weight on it, then pour on 3 gallons of boiling water, cover the vessel closely, and let it stand until it cools; then take hold of the tobacco leaves and twist them hard to get the liquid out; add 3 gallons of milk or corn-meal gruel (cooked). You now have near 6 gallons of fluid that is ready for use, which you will give to about 30 hogs, and at the expiration of twelve hours repeat the dose, which I think will be sufficient to clear the herd of disease, worms or no worms. Such is the history of the use of tobacco infusion in hog cholera.

In conclusion, and in point of justice to myself, you will please excuse my promiscuous letter—promiscuous as the result of being frequently interrupted by calls and callers while writing, although I hope some good may grow out of some thought it may produce.

Yours, most respectfully,

W. S. D. JOHNSON.

Hon. W. H. HATCH,
Washington, D. C.

While our investigations and those of many others demonstrate that the contagious disease known as swine-plague is not caused by intestinal parasites, it nevertheless remains certain that hogs are very subject to these pests, and that often they exist in such numbers as to make the animals unthrifty, and even to cause fatal disease. Doubtless these parasitic troubles are generally confounded by the farmers with swine-plague, as few are able to discriminate between the symptoms of the two forms of disease. The symptoms of swine-plague, as a rule, appear much more suddenly; there is a higher fever, more complete loss of appetite, and the deaths occur sooner than happens from the effects of intestinal worms uncomplicated by other diseases. It appears from our *post mortem* examinations that the cases are very rare where the walls of the intestines are completely pierced by these parasites, and even more rare where the contents of the bowel have escaped through such perforations and set up peritonitis. During the past seven years the writer has been engaged much of his time investigating the diseases of swine, and has made hundreds of careful *post mortem* examinations, never neglecting to examine thoroughly both the internal and external surface as well as the contents of the intestines. All the parasites found have been examined and their species determined, and although in a great majority of cases several varieties were present we have not seen but one case in which a single worm had pierced the intestinal wall, and made an opening in the peritoneal cavity. In that instance an *echinorrynchus gigas* had thrust its head through one wall of the bowel, and had attached itself to another fold of intestine which laid against it. There was, however, no escape of fecal matter, and very little inflammation had resulted. We are inclined to the opinion, therefore, that the effects of intestinal parasites in hogs are seen in general unthriftiness, imperfect digestion, and assimilation of food, capricious appetite, wasting, and death as a result of weakness rather than from fever or inflammation.

As to the effect of tobacco on genuine swine-plague we are not prepared to give an opinion. Independently of its effect upon parasites it may have a beneficial action on the pathological process of swine-plague. Dr. Johnson has evidently used it in this disease as well as for parasites

with apparently good results, and we recommend its trial by our readers whose herds are afflicted with this scourge, and hope they will make report as to its effects.

EXTIRPATION OF CONTAGIOUS PLEURO-PNEUMONIA IN THE NETHERLANDS.

Hon. Isaac Bell, jr., American Minister at the Hague, in a dispatch to the Secretary of State under date of January 13, 1886, gives the following information relative to the success of the Dutch Government in its efforts to extirpate the disease of contagious pleuro-pneumonia among the cattle of the Netherlands:

LEGATION OF THE UNITED STATES, *The Hague, January* 13, 1886.

SIR: I have the honor to report that the central committee of the Agricultural Society of Friesland devoted considerable attention during a recent session to the question of contagious pleuro-pneumonia among cattle. It is generally claimed here that this malady has completely disappeared from the Netherlands, with the exception of a few sporadic cases.

The press of the country having given great credit to the minister of the interior, Mr. Heemskerk, for the energy shown by him in the eradication of the disease, I took occasion in a recent informal interview with him to mention the subject.

He informed me that with the exception of a few sporadic cases it was safe to say that the disease known as pleuro-pneumonia was entirely eradicated from the Netherlands, but that the greatest precautions were still exercised to prevent any recurrence of the disease.

The importation of live cattle for food is strictly prohibited, and in cases where the stock is imported for breeding purposes, certificates are required showing not only that the cattle to be imported are in a healthy condition, but also that the place or locality from whence they are intended to be shipped is entirely free from disease; and moreover cattle so imported are subject to a police supervision for three months, and in case of being moved from one town to another are watched to see that no symptom of the disease appears.

This Government has experimented with all known remedies in their efforts to combat the contagion, beginning, as is usual in such cases, with economical remedies. After spending much time and money they have concluded that the only efficacious remedy is the slaughtering of all infected or suspected animals.

For some time the Government experimented with hospitals for the care and treatment of the cattle by inoculation. This experiment appears to have met with fair success in a scientific point of view, but was in the main considered too expensive, and was accordingly abandoned as a Government institution. Since then all infected animals have been killed, and the Government has paid a certain proportion of their value, according to circumstances.

The appropriation voted by the States General last year to combat the contagion was $200,000, but in previous years the amounts granted, during the height of the epidemic, were very much larger.

Notwithstanding the supposed disappearance of the disease from the Netherlands, the central committee above mentioned, it appears, do not deem it wise to rest upon such a result.

From information presented to the committee it appears that the malady still continues in Belgium and the eastern part of Germany. Owing to the constant intercourse between these countries and the Netherlands, the latter is at all times threatened with a return of the contagion notwithstanding the regulations in force against the importation of live stock. The committee have decided, therefore, to petition the King requesting him to favor the conclusion of an international convention with a view to the adoption abroad of analogous measures to those taken in the Netherlands to eradicate the disease when developed.

The recognized seat of the disease in the Netherlands was in the district of Schiedam, to which point cattle have heretofore been brought from other sections of the country to be quickly fattened in close stables on the cheap food supplied by the numerous distilleries found in that vicinity.

All suspected cattle in that district were immediately killed, and the measures were adopted June 9, 1885, there, as elsewhere in the Kingdom, to eradicate the disease.

I inclose herewith a copy of the law in Dutch, and an official translation of the same.

It having been reported here that the Netherlands Government had addressed to the foreign Governments a note inviting their attention to the means employed in this

country to combat the malady, and requesting them, in the interests of international agriculture, to take efficacious measures to exterminate the disease, I deemed it proper to inquire officially of the foreign office what, if any, measures have been taken by this Government to prevent the reappearance and introduction of the disease from neighboring States.

In reply the minister of foreign affairs, under date of December 19, wrote as follows:

"MR. MINISTER: By your letter of the 26th of November last, you have expressed a desire to obtain official information concerning the measures which the Government of the King has taken to prevent the introduction of the epizootic in the Netherlands.

"Having hastened to consult on this subject the minister of the interior, I now have the honor to inclose under cover of this a copy of the royal orders of the 8th December, 1870, and of the 9th April, 1884, prohibiting the importation and transit of cattle, sheep, goats, fresh skins, fresh and salt meat, grease not melted, manure, wool, hair, feet, horns, and waste of animals, as well as live hogs.

"It appears from the communications of the minister of the interior and of the finances inserted in the official journal of March 12 last, of which you will also find a copy herewith, that it is an exception, and only under certain conditions, that the Government of His Majesty accords the suspension of this prohibition.

"My colleague has observed, however, that the satisfactory sanitary state of the cattle in the Netherlands at the present time should be attributed without doubt to the measures which I have referred to, to an energetic vigilance, and to the rigorous maintenance of the law of the 20th July, 1870, in relation to veterinary police, and to the laws and decrees destined to that end.

"The measures prescribed by those regulations consist, principally, in the isolation of the contaminated localities, in branding and inoculating the cattle which are found there, in controlling the cattle through the veterinaries, in assuring the observance of the legal provisions by the merchants of the country, in killing the infected and suspected cattle, and in disinfecting all stable establishments of the said localities by special functionaries.

"I inclose also copy of the laws and decrees concerning these measures, as well as a report of the veterinary police for the year 1884.

"Hoping that this information may prove satisfactory, I seize the occasion to renew, &c.,

"V. KARNEBECK."

The documents mentioned by his excellency are inclosed herewith.

I have the honor to be, sir, your obedient servant,

ISAAC BELL, JR.

Hon. THOMAS F. BAYARD,
Secretary of State.

STRICT ENFORCEMENT OF THE CONTAGIOUS DISEASES (ANIMALS) ACT OF GREAT BRITAIN.

The following letter from the Hon. Robert E. Drummond to the Secretary of State will explain itself:

LEGATION OF THE UNITED STATES, *London, February* 24, 1885.

SIR: I have the honor to forward herewith the copy of a letter which I have lately received from Mr. Robert E. Drummond, the secretary of the Foreign Cattle-Trade Association, showing the strictness with which the authorities here have enforced the application of the contagious diseases (animals) act, in the case of recent importations from Hamburg and Bremen, and requesting me to bring this subject again to the attention of my Government.

I also inclose a copy of the suggestions issued by the association.

I have, &c.,

J. R. LOWELL.

Hon. F. T. FRELINGHUYSEN,
Secretary of State.

FOREIGN CATTLE-TRADE ASSOCIATION,
23 *Great St. Helens, London, E. C., February* 19, 1885.

To the Ambassador of the United States of America, 31 Lowndes Square, S. W.:

YOUR EXCELLENCY: Should it not have already been brought to your excellency's notice, I take the liberty of informing you that last week there arrived a cargo of about 600 sheep at Deptford, per steamer Virgo, Hamburg, 1 sheep only being found

to be suffering from foot-and-mouth disease, and in consequence our Government at once passed an order of council prohibiting any further importations of animals from that port.

This week a cargo of 2,200 sheep arrived at Deptford, per steamer Schuvan, Bremen, with 1 sheep only suffering from the disease, and an order was immediately issued prohibiting further imports from this German port also.

I merely bring these two cases under the notice of your excellency for the purpose of showing how strictly it is evidently the intention of our Government to administer the contagious diseases (animals) act of 1884.

Many of the members of this association being very largely interested in the importation of live stock from the United States, my chief object in now addressing your excellency is to inquire whether you think it necessary or desirable to make any representations to your Government upon this important subject.

I am aware that strict regulations as regards the movement and examination of animals before shipment to this country exist in the United States ports, but it is just possible that even these, strict as they may be, may be supplemented or improved, and in view of the very severe manner in which the act is being carried out in this country, I trust pour excellency will not consider me presumptuous in bringing the matter before you, with the view of more stringent measures of precaution, if possible, being adopted in your country to prevent the introduction of foot-and-mouth disease into Great Britain, as I fear were any single case of this dreaded complaint to be found to exist in United States animals brought here it would involve the stoppage of the live-cattle trade in this country.

I need scarcely say I would not have presumed to trouble your excellency upon this subject had I not thought it of very great importance to all those interested in this trade on both sides of the Atlantic.

I take the liberty of inclosing copy of the suggestions issued by my association last year for the conduct of the live-stock trade, and, trusting your excellency may be pleased to take such steps as you may deem expedient to assist the ends the association have in view, I have, &c.,

ROBERT E. DRUMMOND.

FOREIGN CATTLE-TRADE ASSOCIATION,
23 *Great St. Helens, E. C., May* 31, 1884.

To all those interested in the live-stock trade to England:

In consequence of the recent passage of the contagious diseases (animals) bill through both houses of the British Parliament, the restrictions upon the importations into England of live animals from foreign countries where foot-and-mouth disease is known to exist will be of a much more stringent nature than hitherto.

The committee of the Foreign Cattle-Trade Association of London, therefore, very strongly recommend the adoption of the following suggestions to all shippers of live stock from foreign countries to England, and others interested in keeping the trade to this country open:

(1) That all railway trucks and other vehicles conveying animals to ports of shipment, all lairs, sheds, stables, shipping stages, gangways, and other places with which animals (whether healthy or not) have been in contact at the ports, should be thoroughly cleansed and disinfected immediately after each time of being used.

(2) That a very strict examination of all vessels conveying live stock should take place previous to embarkation of animals, and if not properly cleansed and disinfected, shipment should be prohibited until the vessel is placed in a condition to satisfy the inspectors.

(3) That animals intended for shipment to England should, if possible, be at the port of embarkation at least twelve hours previous to shipment.

(4) That all animals should be most carefully and minutely examined by a duly qualified veterinary surgeon as soon as they arrive at the shipping point, and again immediately before shipment.

(5) That each lot of animals arriving at the port for shipment should, as far as practicable, be kept separate until shipped. On no account should they be mixed with other lots until after being examined and found perfectly healthy.

(6) Should any animal, at any examination, be found to be suffering from, or exhibiting any symptoms of, foot-and-mouth disease, it, and all others with which it has been in contact, should be positively refused shipment. All should be marked, and on no pretext whatever should any of the lot, whether large or small, be allowed subsequent shipment. It is not sufficient to separate the unhealthy from the apparently sound and permit the latter to be shipped, as on arrival here they will probably have developed the disease; in which case further importations from the port or the country will be immediately prohibited by the British Government.

(7) That none but perfectly healthy animals should be permitted to be shipped to England, and as far as possible animals should be prevented remaining on the shipping places after the departure of steamers.

(8) That all vessels carrying live stock should be very thoroughly cleansed and disinfected immediately after discharging each cargo.

(9) That all persons interested in the continuance of the live-stock trade between foreign countries and Great Britain should assist in endeavoring to prevent the shipment of unhealthy animals to England.

(10) That these suggestions should be reprinted in the language of the various exporting countries, and publicly exposed and distributed amongst all persons interested.

ROBT. E. DRUMMOND, *Secretary.*

LAWS FOR THE CONTROL OF CONTAGIOUS ANIMAL DISEASES IN THE HAWAIIAN ISLANDS.

The following letter from Consul McKinley is in response to one from this Department asking for information in regard to the importation into, and the condition of cattle in that Kingdom:

CONSULATE OF THE UNITED STATES,
Honolulu, H. I., April 30, 1885.

SIR: I have to acknowledge the receipt of your letter of the 6th instant, requesting information in regard to the importation of cattle into this Kingdom from Great Britain and other foreign countries, and also requesting to be informed as to contagious diseases prevalent here among cattle, and regulations in force touching their importation.

In reply, I beg to inform you that no animal can be landed from any foreign port at any port of entry in this Kingdom until examined by an inspector appointed for that purpose and pronounced healthy.

There are no contagious diseases among the cattle here. Glanders has been prevalent for some time among the horses, but since a law was passed by the legislature in 1884 (a copy of which is inclosed) the disease has been gradually stamped out, and will, no doubt, disappear entirely in a few months. Up to this date about 100 horses have been destroyed by order of the inspectors in Honolulu, and the blankets, &c., belonging to them buried.

The glanders was brought here from California, as near as can be ascertained, about three years ago. The disease has been mostly confined to imported horses, none of the native horses having contracted it.

A good veterinarian was appointed by the Government in October of 1884, for the purpose of enforcing the law.

The few cattle imported here are brought from Europe via. the United States, and from the stock farms of California and New Zealand.

Very respectfully, yours,

D. A. MCKINLEY,
United States Consul.

Hon. E. A. CARMAN,
Acting Commissioner of Agriculture, Washington, D. C.

The following is a copy of the act referred to by Consul McKinley:

Sessions laws of 1884.

AN ACT to amend Chapter XXXIV of the session laws of 1882, relating to the suppression of disease among animals in the Hawaiian Kingdom.

Be it enacted by the King and Legislative Assembly of the Hawaiian Islands in the legislature of the Kingdom assembled:

SECTION 1. That sections 1, 2, 3, and 4 of said act be, and the same are hereby, amended so as to read as follows:

"SECTION 1. The minister of the interior is hereby authorized and directed to establish on each of the islands of the Kingdom having ports of entry, a quarantine station or stations for animals.

"SEC. 2. The minister of the interior is hereby authorized and directed to appoint three competent persons for each of the islands of the Kingdom, having ports of entry, who shall be designated "boards of inspectors of animals," and from time to time, when such officers, for any reason shall become vacant, to reappoint competent persons to fill the same. One of the three appointed on each board shall be designated the executive. Such officers, for the purpose of this act, shall possess all the powers,

rights, privileges, and immunities of customs officer or officers acting under the board of health, and it shall be their duty to cause the various quarantine stations to be kept clean and properly fitted for use.

"SEC. 3. The master of any vessel on which there shall have been shipped live animals for any port in this Kingdom shall immediately, upon arrival, notify the customs officers of such fact, and said officers shall at once cause the inspecting officers to be notified, and shall not permit the animals to be taken from the wharf or landing, nor of any portion of the food or water, nor of any effects connected therewith or provided for their use during the voyage, to be removed from the wharf or landing until the inspecting officer shall have inspected and passed the same.

"SEC. 4. All live animals, except such birds and small animals as shall be especially exempted by the inspecting officers, shall be subject, on arrival in this Kingdom from any foreign port or country, to be quarantined at the expense of the owner or consignee thereof, in such places as shall be appointed by the minister of the interior for a period of not less than thirty days, and for such longer period as shall be deemed necessary by the board of inspectors on account of the presence of any contagious disease or distemper, or because the port or country whence such animals are brought is affected with such disease or distemper, or for any other good and sufficient reason having reference to the public good. Whenever, after careful examination and attention, the inspecting officer shall find that such animal or animals are infected with any disease or distemper of a nature dangerous to the live stock of the country, he shall report the same to the board of inspectors, and if the majority of the board of inspectors shall decide that the public interest require, they shall cause such animal to be utterly destroyed. Said board of inspectors may also cause all the food and other effects connected with such animals, independently of the animals themselves, to be destroyed."

SEC. 2. That said act be further amended by adding thereto the following sections, to be designated sections 7 *a* and 7 *b*:

"SEC. 7 *a*. It shall be the duty of every person to report immediately to the nearest executive inspector or inspecting officer any animal on or about his own premises or the premises of another, which he shall have reason to believe to be affected with any infectious or contagious disease or distemper, under a penalty of not less than five nor more than one hundred dollars for each offense.

"SEC. 7 *b*. Said inspecting officers shall have the power to enter upon any premises where they have reason to believe there is any animal affected with any infectious or contagious disease or distemper of a nature dangerous to the live stock of the country, and to cause any such animal to be placed in quarantine for such time as said officer may deem necessary; and shall have the power, with the approval of the majority of said board, to cause any such animal to be destroyed."

SEC. 3. That section 9 of said chapter also be amended so as to read as follows:

"SEC. 9. There shall be collected from the owner or consignee of animals inspected under this act one dollar per head for all horses, mules, and cattle; fifty cents per head for all sheep and goats; ten cents each for every other animal or bird; and when, from the nature of the case, the making of such inspection shall be unusually onerous or severe, twenty-five per cent. additional shall be paid to the inspector. All fees collected shall belong to the officer making the inspection, and shall be full compensation for his services for such inspection."

SEC. 4. That said act be further amended by adding thereto the following sections to be designated section 9 *a* and section 9 *b*.

"SEC. 9 *a*. The several executive inspecting officers of the Kingdom shall keep regular records of the proceedings of their respective boards, and shall semi-annually make a full and detailed report of their receipts and expenses to the minister of the interior, who shall lay the same before the legislature.

"SEC. 9 *b*. All reasonable expenses incurred in placing any diseased animal in quarantine, and of feeding and caring for the same, including medical treatment, while in quarantine, shall be paid by the owner or consignee of such animals. Any executive inspector appointed under this act may sue in his own name or the majority of any of said boards any such owner or consignee who shall refuse or neglect to pay the fees or expenses mentioned in this act, or may in his or their discretion, hold any animal for which the fees and expenses have not been paid after demand, and after five days' public notice sell the same at public auction (provided such animal be not affected with any infectious or contagious disease or distemper), and from the proceeds of such sale the executive inspector or majority of such board may retain a sufficient amount to cover the fees and all expenses incurred, and the balance pay over to the owner or consignee of the animal thus sold."

Approved this 11th day of August, A. D., 1884.

KALAKAUA, *Rex.*

LAWS OF THE STATES AND TERRITORIES FOR THE CONTROL OF CONTAGIOUS ANIMAL DISEASES.

Transcripts of the laws of all the States and Territories having enactments for the control of contagious, infectious, and communicable diseases of domesticated animals, and the proclamations of the governors of the States which have adopted quarantine measures to prevent the introduction and spread of disease, will be found below. These laws occupy considerable space, but as inquiries are frequently made of this Bureau as to the nature and requirements of the quarantine regulations in force in the States and Territories into which the writers desire to ship cattle and other domestic animals, it has been thought best to publish the laws and regulations as they exist in those States and Territories where any legislation has been had on the subject. They are as follows:

COLORADO.

The State veterinary and sanitary board to the people of the State of Colorado, greeting:

In the making of all new laws there must, of necessity, be some friction, but it is desirable that there should be nothing to jeopardize the stock interests of this State. It is only by the full and complete sympathy of the stockmen that we can hope to meet with success in keeping our State free from disease. Our only hope lies in keeping diseases from getting a foothold within our borders, and to do this we must have the honest and earnest support of the shippers of stock. There exist now within the State certain contagious and infectious diseases. Glanders, although not so prevalent in this State as in some of the other States, is still increasing.

The interests of the horse-owners demand that this disease shall be stamped out, and it is only by the united aid of all horsemen that it can be done. The experience of Illinois, during the last three years, with this insidious disease in loss of property and human life, must be a warning to us.

Mange, or "Texas itch," also exists in some localities, and must, if the best interests of the stockmen are to be advanced, be completely eradicated and then kept out.

In case of the outbreak of any form of a suspected contagious or infectious disease, it is the duty of the person owning the stock, and of any one knowing of the same, to carefully guard against the movement of said stock in any way, and also to guard against the carrying of the disease from the herd upon the boots or clothing of persons visiting such herds, and to use all possible precaution to prevent the spread of the disease. And it shall be the duty of all persons knowing of such disease, or suspected disease, to at once notify the veterinary sanitary board of the same, giving a careful detail of all symptoms and conditions.

The veterinary sanitary board would call the attention of stock-owners to the fact that the law applies to all forms of contagious and infectious disease of all animals within this State, and that any person found violating the provisions of this act, or the rules or regulations adopted by the State veterinary sanitary board, may be arrested upon view and prosecuted by the district attorney according to law, and that any person violating, disregarding, or evading any of the provisions of this act, or of these rules and regulations, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined in the sum of not less than $100 nor more than $5,000, or by imprisonment, or by both fine and imprisonment.

In pursuance of its duties the board has adopted the following rules and regulations, which will be added to or amended as the exigencies of the case will demand:

(1) The general action of this board shall be governed by the act under which it is created.

(2) The introduction of cattle from all parts of the country south of the thirty-sixth degree of north latitude shall be governed by an act entitled "An act to prevent the introduction of infectious or contagious diseases among the cattle and horses of this State."

(3) In order that a bill of health can be procured from the veterinary sanitary board, as prescribed in this act, it will be necessary that the following statements shall be satisfactorily made under oath, viz: The State and county where the stock was raised, and where they have been ranged, said statement to be accompanied by a certified bill of sale or statement from the persons raising and ranging such stock during the six months previous, and by a certificate from the clerk of the county as to the owner or owners of the brands upon the stock, and by a certificate from the inspectors.

The person must state under oath the route over which they have been driven, and must also state the various herds of cattle, feeding places, &c., with which they have come in contact, and must satisfactorily answer all questions that may at the time be suggested.

(4) No cattle that have been shipped from the districts south of the thirty-sixth degree of north latitude any portion of the way to this State will be allowed to come within this State until the ninety-day quarantine law has been fully complied with.

(5) Only those cattle being shipped from south of the thirty-sixth degree of north latitude through this State to the ranges of other States and Territories can be unloaded within this State, and then only to be fed and watered, which feeding and watering must be done only in pens kept for that especial purpose, and kept properly disinfected by the several lines of transportation, which pens, as to location and construction, shall be approved by the veterinary sanitary board.

(6) It is hereby ordered by the veterinary sanitary board that all railroads bringing stock-cars into this State shall, before bringing them into the State, clean and carefully disinfect said cars, and in case of the unloading of stock within the State, cars must in all cases be carefully cleansed and disinfected, and all litter and manure completely burned or otherwise disinfected.

(7) Cars and pens will be considered disinfected only when they have been carefully washed and thoroughly sprinkled with unslacked lime, crude carbolic acid, or some other approved disinfectant.

Parties desiring to bring stock from States against which quarantine exists should address the secretary of the board.

All communications in relation to the business of this board should be addressed to the secretary, George C. Faville, State veterinarian, Fort Collins, Colo.

By order of the board:

GEO. C. FAVILLE, *Secretary.*

AN ACT to prevent and suppress infectious and contagious disease among the domestic animals of this State, and for the appointment of the necessary officers to carry into effect the same, and to fix compensation.

Be it enacted by the general assembly of the State of Colorado, The office of State veterinary surgeon is hereby created.

SEC. 2. Immediately upon the passage of this act the governor shall appoint to the office of State veterinary surgeon the person elected by the State board of agriculture as the professor of veterinary science, and holding the chair of veterinary science in the State Agricultural College.

SEC. 3. The person so appointed shall hold his office for the term of two years from the date of his appointment, provided such person is not deposed during such term by the State board of agriculture from his position in the State Agricultural College.

SEC. 4. The person so appointed as State veterinary surgeon shall, before he enters upon the duties of his office, take and subscribe to an oath to faithfully and impartially discharge the duties of his office, and give a bond running to the people of the State of Colorado, in the sum of $10,000, with good and sufficient sureties, for the faithful performance of his duties. Such bond to be approved by the governor, and together with the oath of office to be filed in the office of the secretary of state.

SEC. 5. In case the person holding the office of State veterinary surgeon shall be deposed by the State board of agriculture from the chair of veterinary science in the State Agricultural College, or a vacancy occur from any cause, then his term of office shall thereupon expire, and the person selected by the State board of agriculture to fill the vacancy of the chair of veterinary sicence in the State Agricultural College shall be appointed by the governor to fill the unexpired term. Such person so appointed to fill the unexpired term shall take oath, and give bond, as provided in section 4 of this act.

SEC. 6. There is hereby created a State veterinary sanitary board, such board to be comprised of three members, namely: The State veterinary surgeon and two other

members to be appointed by the governor, by and with the advice and consent of the senate. Such persons so appointed shall hold their office for the term of two years.

SEC. 7. The State veterinary sanitary board shall have stated meetings annually, to be held at the State capitol, but may have called meetings at such times and places as may be deemed necessary, the chairman calling the same.

SEC. 8. It shall be the duty of the State veterinary surgeon to investigate any or all cases of contagious or infectious diseases among the domestic animals of the State which may come to his knowledge, and for that purpose he shall visit at once any locality within the State where any such disease may be reported to exist, and make full and careful examination of all or any animals in that locality. He shall also prescribe the proper care and necessary remedies, inaugurate and direct the necessary sanitary measures to prevent the spread of such disease, and report the same to the State veterinary sanitary board. He shall also make a scientific study and investigation of all diseases of domestic animals, and report the result of his study and investigation to the State sanitary board, and shall publish from time to time bulletins for the benefit of the people of the State, and in connection with the State veterinary sanitary board, embody the same in a yearly report, which, with the proceedings of the board, shall be published in connection with the annual report of the State board of agriculture.

The State veterinary surgeon shall also perform such other and further duties as may be prescribed by law, or formulated under the State veterinary sanitary board.

SEC. 9. It shall be the duty of the State veterinary sanitary board to adopt such quarantine regulations as are deemed necessary to prevent the introduction or spread of Texas or splenic fever, contagious pleuro-pneumonia, or any other contagious or infectious disease, affecting domestic animals, under such regulations as shall be prescribed by law.

SEC. 10. The State veterinary sanitary board shall have power to order the destruction of stock in order to prevent the spread of disease or to crush out such disease, when deemed necessary by such board for the public safety: *Provided, however,* No stock shall be killed on account of its being affected by Texas or splenic fever.

SEC. 11. Whenever the State veterinary sanitary board decide that it becomes necessary to condemn stock and order the same killed, and so decide, it shall be their duty to convene a board of three appraisers, such board to be selected, one member by the State veterinary sanitary board, one by the owner or owners of the condemned stock, and a third by agreement of the two previously selected. When convened, it shall be the duty of such appraisers to certify under oath to the value of the stock so condemned: *Provided,* That no animal shall be condemned and ordered killed unless it showed decided symptoms of a contagious disease, and in making an appraisement of value the appraisers should take into consideration the diseased condition of the animal.

SEC. 12. When any live stock shall have been appraised, as herein provided, and killed by the order of the State veterinary sanitary board, such board shall issue, under its seal to the owner or owners of the live stock so killed, a certificate showing the number and kind of animals so killed, and not to exceed in value one thousand ($1,000) dollars in any one year, and the amount of money to which the holder is entitled by reason of the appraisement heretofore mentioned, and report the same to the auditor of State. Upon presentation of such certificate to the State auditor he shall draw his warrant on the State treasurer for the amount therein stated: *Provided,* That the provisions of this section shall not apply to any animal or animals that shall be proved to have been in a diseased condition when brought into this State, or have been brought into the State contrary to any law of the State, or any rule or rules adopted by the State veterinary sanitary board.

SEC. 13. The State veterinary sanitary board shall have power to employ at the expense of the State such persons, and purchase such supplies and material as may be necessary to carry into effect all orders by it given: *Provided,* That no labor shall be employed, material or supplies purchased by the board except such additional labor, material, and supplies as may be necessary to carry into effect quarantine regulations as prescribed by the State veterinary sanitary board.

SEC. 14. Whenever the State veterinary sanitary board shall have good reason to believe that any contagious or infectious disease exists in any locality in other States, Territories, or countries, or that there are conditions which render domestic animals from such infectious districts liable to convey such disease, they shall report the same to the governor of the State, thereupon the governor shall by proclamation prohibit the importation of any live stock of the kind diseased into the State, unless accompanied by a certificate of health given by the State veterinary sanitary board, who shall carefully examine all such live stock previous to the giving of such certificate. All expense connected with such examinations to be paid by the owner or owners of such live stock so examined.

SEC. 15. Whenever it is deemed necessary by the State veterinary sanitary board to supervise and inspect any of the lines of transportation in this State, and the

stock-yards in connection with the same, suitable inspectors shall be appointed, such as the board shall direct, and these shall be paid by the corporation or corporations, or individual in charge of such lines of transportation and stock-yards. Any such corporation, corporations, or individuals owning or operating such lines of transportation or stock-yards shall conform promptly to all regulations made by the said State veterinary sanitary board, of which they shall have notice from such board.

SEC. 16. The State veterinary sanitary board shall have the power to call upon all sheriffs, deputy sheriffs, or constables to execute their orders, and such officers shall obey the orders of the board. The officers performing such duties shall receive compensation therefor as is prescribed by law for like services, to be paid as other expenses of said board as herein provided, and any officer may arrest on view and take before any magistrate of any county any person found violating the provisions of this act or the rules or regulations adopted by the State veterinary sanitary board, and such officer shall immediately notify the district attorney of such arrest, who shall prosecute the person so offending according to law.

SEC. 17. Any person or corporation who shall violate, disregard, or evade, or attempt to violate, disregard or evade any provisions of this act or any of the rules, regulations, orders, or directions of the State veterinary sanitary board made in pursuance of their official duties, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined in the sum of not less than $100 and not more than $5,000, or imprisonment in the county jail not less than three months nor more than two years, or by both such fine and imprisonment.

SEC. 18. Each member of the State veterinary sanitary board shall receive the actual necessary traveling expenses incurred in the discharge of the duties of this board.

SEC. 19. The State veterinary surgeon shall be paid an annual salary of $2,500, to be paid quarterly out of the State treasury on order drawn by the State auditor, and he shall receive no other or further compensation from the State or State board of agriculture.

SEC. 20. For the purpose of this act each member of the State veterinary sanitary board is authorized and empowered to administer oaths and affirmations, and they are futher empowered to question individuals or agents or corporations under oath, for the purpose of eliciting information to be used before the board in the furtherance of its duties.

SEC. 21. Inasmuch as the public interest requires that this act should take effect at once, an emergency exists requiring this act to take effect immediately; therefore this act shall take effect and be in force from and after its passage.

AN ACT to prevent the introduction of infectious and contagious diseases among the cattle and horses of this State.

Whereas there is prevalent among cattle and horse stock in the States and Territories south of the thirty-sixth parallel of north latitude, certain infectious and contagious diseases, known as the Texas or splenic fever, Spanish itch, and other diseases of a dangerous and contagious nature; and

Whereas it is essential for the protection of the cattle and horses of Colorado to prevent the introduction and spread of all such diseases within this State; therefore,

Be it enacted by the general assembly of the State of Colorado, It shall be unlawful for any person, association, or corporation to bring or drive, or cause to be brought or driven, into this State any cattle or horses having an infectious or contagious disease, or which have been herded or brought into contact with any other cattle or horses laboring under such disease, at any time within ninety days prior to their importation into this State.

SEC. 2. It shall be unlawful for any person, association, or corporation to bring or drive, or cause to be brought or driven, into this State, between the 1st day of April and the 1st day of November, any cattle or horses from a State, Territory, or country south of the thirty-sixth parallel of north latitude, unless said cattle or horses have been held at some place north of the said parallel of latitude for a period of at least ninety days prior to their importation into this State, or unless the person, association, or corporation owning or having charge of such cattle or horses shall procure from the State veterinary sanitary board a certificate or bill of health to the effect that said cattle or horses are free from all infectious or contagious diseases, and have not been exposed at any time within ninety days prior thereto to any of said diseases.

SEC. 3. Any person violating the provisions of this act shall be deemed guilty of a misdemeanor, and shall on conviction be punished by a fine of not less than $500, or more than $5,000, or by imprisonment in the county jail for a term of not less than six months and not exceeding three years, or by both such fine and imprisonment.

SEC. 4. If any person, association, or corporation shall bring or cause to be brought into this State any cattle or horses in violation of the provisions of section 1 or 2 of this act, or shall by false representation procure a certificate of health as provided

for in section 2 of this act, he or they shall be liable in all cases for all damages sustained on account of disease communicated by or from said cattle or horses; judgment for damages in any such case, together with the costs of action, shall be a lien upon all such cattle and horses, and a writ of attachment may issue in the first instance without the giving of a bond, and the court rendering such judgment may order the sale of said cattle or horses, or as many thereof as may be necessary to satisfy said judgment and costs. Such sale shall be conducted as other sales under execution.

SEC. 5. Inasmuch as the public interest requires that this act should take effect at once, therefore an emergency exists, and this act shall take effect and be in force from and after its passage.

CONNECTICUT.

Extracts from revised statutes of Connecticut, part 9 of chapter 1 of title 3, relating to State board of agriculture.

SEC. 6. For the purpose of preventing the spread of contagious diseases among domestic animals, said board may, when in its judgment public safety demands, prohibit the introduction of any such animals into this State. When any contagious disease exists in the State, the board may quarantine all infected animals, or such as they suppose have been exposed to contagion, prohibit any animal from passing on or over any of the highways near the place of quarantine; enter upon any premises where there are animals supposed to be infected with any disease, and make all investigations and regulations necessary for the prevention, treatment, cure, and extirpation of such disease.

SEC. 7. The board may appoint suitable persons to inquire into and report to it all violation of law, and of any regulation made by it; and may also appoint three commissioners on diseases of domestic animals, who shall have all the powers of the board in regard thereto.

CHAPTER LXXIII.—AN ACT conferring upon the State board of agriculture power to kill diseased animals.

Be it enacted by the senate and house of representatives in general assembly convened, The State board of agriculture, or in case said board have or shall appoint commissioners on diseases of domestic animals under the provisions of section 7 of the act to which this is an addition, then said commissioners may, when, in their judgment, the public good shall require it, cause to be killed and to be disposed of afterward as, in their judgment, may be expedient, any animal or animals which in their judgment are infected with or have been exposed to and are liable to communicate to other animals any contagious disease.

SEC. 2. The said board of commissioners, after notice to the owners of such animals, or, if the owner does not reside in the town where such animals are, to either the owner or keeper of such animals, shall cause all animals before being killed under the provisions of the preceding section to be appraised at the assessed value in their respective towns by the assessors, or a majority of them, of the town where such animals are kept; and it shall be the duty of the assessors of the several towns to make such appraisal upon the request of said board of commissioners, and two-thirds of such appraised value of such animals, if killed, shall be paid to the owner thereof by the State, upon the approval of the governor.

Approved March 25, 1880.

CHAPTER LXXXI.—AN ACT to prevent the spread of glanders.

Be it enacted by the senate and house of representatives in general assembly convened, Any person who shall knowingly sell or offer for sale, or cause to be sold or offered for sale, or who shall use or expose, or allow to be used or exposed, any horse or other animal having the disease known as the glanders or farcy, shall be fined not more than fifty dollars or imprisoned not more than thirty days.

Approved, April 17, 1883.

DAKOTA.

AN ACT to prohibit the importation of Texas and Cherokee cattle into the Territory of Dakota, and for other purposes.

Be it enacted by the legislative assembly of the Territory of Dakota, That it shall be unlawful for any person or persons, railroad company or other corporation, or any association of persons, to bring into this Territory any Texas or Cherokee cattle except between the first day of November of each year and first day of February following:

Provided, That the right to bring into this Territory any such cattle shall in no case be any defense for any injury sustained by any one by reason of the bringing of such cattle into this Territory.

SEC. 2. That it shall be unlawful for any person or persons, railroad company, or other corporation or association of persons whatever within this Territory, to own or have in possession or control any Texas or Cherokee cattle which may have been brought into this Territory at any time, except between the first day of November of each year and the first day of February following.

SEC. 3. That any person or persons who shall bring into this Territory, or cause to be brought therein, any Texas or Cherokee cattle, except at the time permitted in section one, or who shall own, possess, or control any such cattle, except as allowed in section two, shall be guilty of a misdemeanor, and (in) shall be liable to indictment and conviction, fine and imprisonment, and shall be fined, upon conviction, in any sum not exceeding ten thousand dollars nor less than two hundred dollars, and in addition to such fine may be imprisoned, in the discretion of the court. And any such person may, in the first instance, be brought before any justice of the peace, and be held to bail to appear before the district court in the county or subdivision where such justice of the peace shall reside to answer to any charge as may be preferred against him; and any railroad conductor, or servant, agent, or officer of any railroad who shall bring any such cattle into this Territory upon any railroad or vessel connecting therewith from any one point to another within this Territory shall be deemed to have possession of such cattle within the meaning of this section.

SEC. 4. That any and all fines which may be collected under section three shall be subject to the order of the board of county commissioners for the purpose of being divided pro rata among the persons who may have suffered loss or damage on account of any such cattle being brought into or being within this Territory, upon proof of loss or injury, in such manner as said board shall direct; but if no proof of such loss or injury shall be made to such board of county commissioners within one year after the collection of any such fine, then it shall be the duty of such board to order the said county treasurer to credit such fine or fines to the common school fund of the county, to be used in payment of teachers of common schools.

SEC. 5. That whenever in any case any damage or loss shall or may be occasioned to any person or persons, resulting in any manner from any such Texas or Cherokee cattle having been brought into this Territory, at any time by any person or persons, railroad company, or any other corporation or association of persons, then such person so bringing into or owning, possessing, or controlling such cattle in this Territory, shall be liable, jointly or severally, to any person or persons who may suffer loss or damage by reason of such bringing in, conveying into, possessing, owning, or controlling within the Territory any such cattle, and that [in] any action for the recovery of damages or compensation for any loss or damage which may be sustained by any person or persons from any such cattle, it shall be sufficient for the plaintiff or plaintiffs to show that the injury of which he or they may complain, arose from any such Texas or Cherokee cattle which may have been owned or had in possession, or brought into the Territory at any time within the year by any such defendant, or that such cattle so brought in, owned, or possessed had been where such loss or damage had been sustained. And it shall not be necessary for the plaintiff to show that the injury of which he may complain, accrued while any such Texas or Cherokee cattle were in the possession or ownership or control of any such defendant or defendants, it being the intention of this section to make all persons or corporations liable to injured persons in the first instance for any injury which may arise from disease spreading or communicating from such Texas or Cherokee cattle so brought into or owned, possessed, or controlled by them in this Territory.

SEC. 6. That the right to bring into this Territory Texas or Cherokee cattle between the first day of November of each year and the first day of February following, shall in no case be any defense for any loss or damage that may accrue from such cattle to any person; nor shall any right to own, possess, or control any such cattle in any case be a defense for any injury or loss which may arise to any person by reason of such right to own, possess, or control such cattle.

SEC. 7. That in all actions or prosecutions for any loss or injury which may arise or accrue to any person or persons, by reason of any injury or loss done, or caused to be done, to any native or domestic cattle, from or by any such Texas or Cherokee cattle, the proof of the loss of any native or domestic cattle, or any damage thereto, and the amount of such loss or damage, any proof that any such defendant or defendants brought into this Territory, or owned, possessed, or controlled, in this Territory, at any time, any such Texas or Cherokee cattle, which may have caused such injury or loss, shall *prima facie* entitle the plaintiff or plaintiffs to recover; and it shall be competent for any jury to render a verdict, and any court or justice of the peace to render a judgment, in any such case, upon the opinion of witnesses as to whether or not any such Texas or Cherokee cattle caused the injury complained of in such action.

SEC. 8. That in case any such Texas or Cherokee cattle shall be found spreading or communicating any disease among the native domestic cattle of this Territory, it shall be the duty of any judge of the district court or justice of the peace, upon oath of any householder setting forth that such Texas or Cherokee cattle are spreading or communicating disease among the native or domestic cattle within this Territory, and the name of the owner or party in whose possession or control such Texas or Cherokee cattle may be, to forthwith issue a warrant to any sheriff or constable of the county or township, commanding him forthwith to arrest and imprison in some safe place such cattle so spreading or communicating disease, and to summon the owner thereof, or the person or persons found in the possession of such Texas or Cherokee cattle, to appear forthwith before such judge or justice of the peace, and show cause why such Texas or Cherokee cattle shall not be impounded until the first day of November following, and after allowing the prosecuting witness and any such defendant named in such warrant reasonable time to be heard, the said judge or justice of the peace shall proceed to hear and determine whether such Texas or Cherokee cattle have so spread or communicated the disease; it shall be the duty of such judge or justice of the peace to order the officer in charge of such Texas or Cherokee cattle to impound them and keep them to themselves until after the first day of November following, when it shall be the duty of the officer in charge of such cattle so impounded to present to the owner or person entitled to the possession of such cattle, a sworn statement of the costs of taking and keeping and impounding such cattle, including the cost of building the pound and providing materials for the same in case the board of county commissioners or township supervisors, where such cattle where impounded had ordered the pound to be built for the purpose of impounding such cattle, and demand payment of the same together with the costs of such trial aforesaid; and upon payment of the same he shall deliver such cattle to the owner or person entitled to the possession thereof.

SEC. 9. That Texas or Cherokee cattle, as mentioned in this act, shall be taken to mean a class or kind of cattle without reference to where they may have come from: *Provided*, That that portion of this Territory west of the Missouri River is exempted from the provisions of this act; but the right to bring into, own, possess, and control such cattle in such exempted territory shall give no right to send, convey, or cause to be conveyed such cattle into that part of the Territory subject to the provisions of this act, or own or possess the same therein, except that such cattle may be shipped or conveyed by themselves across said river to an inclosure across and without this Territory by continuous passage in cars upon said railroad.

SEC. 10. The object of this act is hereby declared to be for the purpose of preventing the spread of pestilence and disease among native and domestic cattle of this Territory east and north of the Missouri River, which arises and is communicated from that class of cattle described in this act as Texas and Cherokee cattle, and to protect the native and domestic cattle of this Territory from destruction from the poison, disease, or sickness which it is believed is communicated from such Texas or Cherokee cattle.

SEC. 11. This act shall take effect and be in force from and after its passage.

(Indorsed:) Received at executive office March 6, 1883, at 4.40 p. m.

The foregoing act having been presented to the governor of the Territory for his approval, and not having been returned by him to the council of the legislative assembly in which it originated within the time prescribed by the organic act, has become a law without his approval.

GEO. H. HAND,
Secretary of the Territory.

DELAWARE.

CHAPTER 379.—AN ACT to prevent the spread of contagious or infectious pleuro-pneumonia among the cattle of this State.

Be it enacted by the senate and house of representatives of the State of Delaware in general assembly met, That whenever the governor of this State shall receive reliable information that the disease known as contagious or infectious pleuro-pneumonia exists among any cattle in this State, he shall have power, and is hereby authorized to issue his proclamation, stating that the said infectious or contagious disease exists in this State, and warning all persons to seclude all animals in their possession that are affected with such disease, or have been exposed to the infection or contagion thereof, and ordering all persons to take such precautions against the spreading of such disease, as the nature thereof may, in his judgment, render necessary or expedient, to order that any premises, farm, or farms where such disease exists or has existed, to be put in quarantine, so that no domestic animal be removed from such places so quarantined, and to prescribe such regulations as he may judge necessary or expedient to prevent infection or contagion being communicated in any way from the places so quarantined; to call upon all sheriffs and deputy sheriffs in this State to carry out and enforce the provisions of such proclamations, orders, and regulations; and it shall

be the duty of all the sheriffs and deputy sheriffs to obey and observe all orders and instructions which they may receive from the governor in the premises; to employ such and so many medical and veterinary practitioners, and such other persons, as he may, from time to time, deem necessary to assist him in performing his duties as set forth in this act, and to fix their compensation; when in his judgment it shall be deemed necessary to order all or any animals coming into this State to be detained at any place or places for the purpose of inspection and examination; to prescribe regulations for the destruction of animals affected with the said infectious or contagious disease, and for the proper disposition of their hides and carcasses, and of all objects which might convey infection or contagion (provided that no animal shall be destroyed unless first examined by a medical or veterinary practitioner in the employ of the governor, as aforesaid); to prescribe regulations for the disinfection of all premises, buildings, and railway cars, and of objects from or by which infection or contagion may take place or be conveyed; to alter and modify, from time to time, as he may deem expedient, the terms of all such proclamations, orders, and regulations, and to cancel or withdraw the same at any time.

SEC. 2. That in any case where, in the opinion of the governor, it may be deemed necessary to destroy any diseased animal or animals, the said governor shall select and appoint three judicious and impartial citizens of this State to view, and after such view to assess any such diseased cattle at what would be their real value in money were they not so affected; and in case said cattle shall be destroyed, as provided in the first section of this act, then upon certificate of such assessment, duly signed and attested by said assessors, or a majority of them, being presented by the owner or owners of such destroyed animals to the State treasurer of this State, the said State treasurer is hereby authorized to pay to such owner or owners a sum of money equal to two-thirds of the amount of the aggregate assessment upon said cattle so destroyed.

SEC. 3. If any person shall sell or dispose of any animal or animals known to be affected with pleuro-pneumonia, or known to have been exposed thereto within one year prior to such sale or disposal, without due notice to such purchaser that said disease exists in said animals, or that they have been exposed thereto, as aforesaid, he shall be deemed guilty of a misdemeanor, and shall be punished by fine not exceeding five hundred dollars, or may, in the discretion of the court, be imprisoned for a term not exceeding one year.

SEC. 4. If any one knows, or has reason to suspect, that said disease exists among the cattle in his possession, or under his care, he shall forthwith give notice thereof to the governor, and for failure so to do shall be punished by fine not exceeding five hundred dollars or by imprisonment not exceeding one year.

SEC. 5. Any person disobeying the orders of the governor, sheriff, or deputy sheriff, made in conformity to this act, or any person driving or transporting any neat cattle contrary to the regulations made and published, as aforesaid, shall be punished by fine not exceeding five hundred dollars, or by imprisonment not exceeding one year.

SEC. 6. That all the necessary expenses incurred under the direction or by the authority of the governor in carrying out the provisions of this act shall be paid by the State treasurer upon proper certificate of the assessors of diseased cattle which have been destroyed, or upon warrant duly made and signed by the governor on the State treasurer, for all expenses incurred under this act other than the payment for cattle destroyed.

SEC. 7. That animals coming from a neighboring State that have passed a veterinary examination in said State, or have been quarantined and discharged, the owner or driver being provided with a genuine certificate that such animals are not infected with pleuro-pneumonia, shall not be subject to the provisions of this act.

SEC. 8. That all the provisions of this act applicable to the disease known as pleuro-pneumonia be also and is hereby extended to and made applicable to all other infectious or contagious cattle diseases which are virulent and fatal in their nature.

Passed at Dover, March 29, 1881.

AN ACT to amend chapter 379 of volume 16 of laws of Delaware.

Be it enacted by the senate and house of representatives of the State of Delaware in general assembly met, That chapter 379, volume 16, entitled an "Act to prevent the spread of contagious or infectious pleuro-pneumonia among the cattle of this State," be, and the same is hereby, amended as follows, to wit:

Strike out of section one, lines 22 and 23, of said act all after the word "such," in line 22, to the word "other," in line 23. Insert after the word "compensation," and before the word "when," in line 25 of said section, the following, viz: "and to cooperate with the Commissioner of Agriculture of the United States or any other United States officers who are authorized by the statutes of the United States to use the money of the Federal Government, as is necessary in investigating and in such disinfection and quarantine measures as may be necessary to prevent the spread of

the disease." Insert after the word "governor," and before the word "as," in line 34 of said section, the words "or the United States Commissioner of Agriculture."

And further amend section 2 by inserting between the words "effected" and "and," in line 6 of said section, the words "*Provided*, That such valuation shall not in any case exceed the sum of $50 per head." Insert in line 9 of said section, between the words "them" and "being," the words "and approved by the governor."

Insert in line 4 of section 4 of said act, between the words "do" and "shall," the words "shall be deemed guilty of a misdemeanor, and, upon conviction thereof."

Amend section 5, line 4, of said section by inserting between the words "aforesaid" and "shall," the words "shall be deemed guilty of a misdemeanor, and upon conviction thereof."

Amend further by striking out of section 6 of said act all after the word "upon," in line 4 of said section, to the word "upon," inclusive, in line 5.

And further amend the act by adding thereto the following as an additional section:

"SEC. 9. That in the execution of the provisions of section 6 it is hereby provided that there shall not be expended more than the sum of three thousand dollars in any one year."

Passed at Dover, Del., January 22, 1885.

IDAHO TERRITORY.

AN ACT entitled an act to prevent the spread of scab or other infectious diseases among sheep in the Territory of Idaho.

Be it enacted by the legislative assembly of the Territory of Idaho as follows, It shall be the duty of the board of county commissioners of the several counties of this Territory, on the application of three property holders, to appoint a sheep commission who shall subscribe an oath, and enter into bonds to the county commissioners, in any sum that the commissioners may designate, for the faithful performance of the duties of his office; to examine any flocks or flock of sheep in their respective counties.

SEC. 2. That any sheep commissioner shall have the power, if deemed necessary, to summon to his assistance, at any examination, competent persons as experts to assist him.

SEC. 3. That sheep commissioners, if upon examination, of any sheep, flock, or flocks of sheep, shall find them free from scab, or other infectious diseases, shall make and deliver to the owner or owners of said sheep, a certificate in writing, stating that at the date of such certificate said sheep were in a healthy condition. Said certificate shall be recorded in a book kept for that purpose, before it shall be delivered.

SEC. 4. It shall be the duty of the sheep commissioners to make within ten days after the examination, as provided in section one of this act, a statement in writing with their certificate attached thereto, which statement shall set forth the condition of each and every band or flock of sheep in their respective counties, and shall record the same in a book provided for that purpose, to be kept on file in the office of the county auditor of their respective counties.

SEC. 5. The sheep commissioner shall, at any time, upon complaint under oath being made to him, that any sheep within his county, is infected with scab or other infectious disease, proceed at once to examine the sheep so complained of, and if such sheep are found to be so infected, then the certificate of the soundness of such sheep which may have been issued, shall be annulled, and he shall enter on the margin of the record of such certificate the word "annulled," and the date thereof: *Provided*, That upon complaint being made, as provided herein, and the same being found to be frivolous or malicious, then the party making such complaint shall pay all of the costs of such examination.

SEC. 6. That no sheep shall be permitted to enter any county of the Territory until the same shall have been examined by the sheep commissioner of the county which they wish to enter, and a certificate of the healthfulness of such sheep is issued by the said sheep commissioner, to the owner or owners thereof: *Provided*, That where any person or persons may be driving their sheep with due diligence through the Territory, a certificate, as provided in this section, from the commissioner of the county first entered, will be sufficient for all counties through which they wish to pass.

SEC. 7. It shall be the duty of the sheep commissioner, when notified that the owner or owners of any sheep wish to move the same into his county, to proceed as soon as may be to examine said sheep, and, if found in a healthy condition, he shall deliver to the owner or owners thereof a certificate to that effect, whereupon such sheep shall be permitted to enter his county: *Provided*, That no sheep shall enter any of the counties of this Territory until such certificate has been obtained.

SEC. 8. If any person or persons shall drive or cause to be driven into any of the counties of this Territory without first having obtained a certificate of the healthful-

ness of such sheep, such person or persons shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined in any sum not less than $250 nor more than $5,000, and in default of payment shall be committed to the county jail at hard labor until such fine and cost are paid.

SEC. 9. Any person or persons now or hereafter, having ownership of or in any sheep infected by scab or any other infectious disease, shall keep the same secure from contact with other sheep, and shall not be permitted to move or drive the same upon any highway, byway, or across any range where other sheep are liable to range or be driven: *Provided*, That the owner or owners of such sheep so infected may move the same by first obtaining a written permission of the sheep commissioner of the county wherein he wishes to move them, which permission shall state the manner in which they are to be moved and the place to which they are to be moved, and the route designated: *Provided*, That the sheep commissioner shall not give permission to any person or persons to move any sheep so infected across any range where healthy sheep are accustomed to range. Any person or persons violating any of the provisions of this section shall be guilty of a misdemeanor, and, upon conviction thereof, shall be fined in any sum not less than two hundred and fifty nor more than two thousand dollars: *Provided further*, That the sheep commissioner shall have the power to restrain the herding of any sheep already within the limits of Idaho Territory which are or may be infected with scab or other infectious disease.

SEC. 10. The sheep commissioner and his assistant shall each be allowed as compensation for their services, at the rate of three dollars per day for the time actually occupied in the performance of his duties, and ten cents per mile for the distance necessarily traveled by him in examining the sheep of his county, which compensation shall be paid by the owner or owners of the sheep so examined, each according to the number of sheep possessed.

SEC. 11. All acts and parts of acts in conflict with this act are hereby repealed.

SEC. 12. This act to take effect and be in force from and after its passage.

Approved February 7, 1883.

ILLINOIS.

TEXAS OR CHEROKEE CATTLE.

AN ACT to amend an act entitled "An act to prevent the importation of Texas or Cherokee cattle into the State of Illinois," approved February 27, 1867. [Approved April 16, 1869. In force April 16, 1869. L., 1869, p. 402.]

Be it enacted by the people of the State of Illinois, represented in the general assembly, That it shall not be lawful for any person or persons, railroad company or other corporation, or any association of persons, to bring into this State any Texas or Cherokee cattle, except between the first day of October and the first day of March following of each year: *Provided*, That the right to bring into this State any such cattle shall in no case be any defense for any injury sustained to any one by reason of the bringing such cattle into this State.

SEC. 2. That it shall not be lawful for any person or persons, or railroad company or other corporation, or association of persons whatever, within this State, to own or have in possession or control any Texas or Cherokee cattle at any time which may have been brought into this State at any time except between the first day of October and the first day of March following of each year.

SEC. 3. That any person or persons who shall bring into this State, or cause to be brought into this State, any Texas or Cherokee cattle, except at the time permitted in section 1 of this act, or who shall own, possess, or control any such cattle, except as allowed in section 2 of this act, shall be liable to indictment and conviction, fine and imprisonment, and shall be fined, upon conviction, in any sum not exceeding $10,000 nor less than $500, and may be imprisoned, in addition to such fine, at the discretion of the court, not more than six months in the county jail. And any such persons may in the first instance be brought before any justice of the peace and be held to bail to appear before the circuit court to answer to any such charge as may be then preferred against them by indictment: *Provided*, That any railroad conductor or servant, agent or officer of any railroad company who shall haul or ship any such cattle in violation of this act, on any railroad in this State, shall be deemed to have possession of the same within the meaning of this section.—(See "Railroads and warehouses," ch. 114, sec. 72.)

SEC. 4. That any and all fines which may be assessed and collected under section 3 of this act shall be paid into the county treasury, and be subject to the order of the board of supervisors or county court, as the case may be, for the purpose of being divided *pro rata* among persons who may have suffered damage or loss on account of any such Texas or Cherokee cattle being in this State, upon proof of loss, in such manner as such board shall direct; but if no proof of any such loss shall be made to such board

of supervisors or county court, as the case may be, within one year after the collection of any such fine, then it shall be the duty of such board to order the treasurer to credit such fine or fines to the common school fund of the county, to be used in payment of teachers of common schools.

SEC. 5. That whenever, in any case, any damage or loss shall or may be occasioned to any person or persons, resulting in any manner from any such Texas or Cherokee cattle having been brought into this State, or from any such cattle being owned or possessed in this State, at any time, by any person or persons or railroad company, or any other company or association of persons whatever, then any and all of such persons, railroad company, or other corporation or association of persons, who shall have brought into this State or owned or possessed any such Texas or Cherokee cattle within this State, shall be liable, jointly or severally, to any person or persons who may suffer loss by reason of any such owning or possessing within this State, or bringing into this State any such cattle; and that in any suit for the recovery of damage or compensation for any loss which may be sustained by any person so suing, from any such Texas or Cherokee cattle, it shall be sufficient for the plaintiff or plaintiffs to show that the injury of which he or they may complain arose from any lot of Texas or Cherokee cattle which is or may have been owned or had in possession, or brought into this State at any time within the year, by any such defendant. And it shall not be necessary for the plaintiff to show that the injury of which he or they may complain accrued while any such Texas or Cherokee cattle were in the possession or ownership of any such defendant or defendants, it being the intention of this section to make all persons or corporations liable to injured persons, in the first instance, for any injury which may arise from disease spreading from any such Texas or Cherokee cattle.

SEC. 6. That the right to bring into this State Texas or Cherokee cattle, between the 1st day of October and the 1st day of March following, shall in no case be any defense for any loss that may accrue from such cattle to any person; nor shall any right to own or possess or control any such cattle, in any case, be any defense for any injury or loss which may arise to any person by reason of such right to own or possess such Texas or Cherokee cattle.

SEC. 7. That in all suits or prosecutions for any injury which may arise or accrue to any person or persons by reason of any injury or loss done or caused to any native cattle of any person or persons from any such Texas or Cherokee cattle, that then proof of the loss of any native cattle, or damage thereto, and the amount of such loss or damages, and proof that any such defendant or defendants brought into this State, or owned or possessed or controlled in this State, at any time, any such Texas or Cherokee cattle, which may have caused any such injury or loss, shall *prima facie* entitle the plaintiff or plaintiffs to recover. And it shall be competent for any jury to render a verdict, and any court to render a judgment, in any such case, upon the opinion of witnesses, as to whether or not any such Texas or Cherokee cattle caused the injuries complained of in any such suit.

SEC. 8. That in case any such Texas or Cherokee cattle shall be found spreading any disease among the native cattle of this State, it shall be the duty of any circuit or county judge, or justice of the peace, upon oath of any householder setting forth that such Texas or Cherokee cattle are spreading disease among native cattle, and the name of the owner or the party in whose possession they may be, to forthwith issue a warrant to any sheriff or constable of the county, commanding him forthwith to arrest and impound such cattle, so spreading disease, in some safe place, and to summon the owner thereof or the person found in the possession of the said cattle, to appear forthwith before such judge or justice of the peace, and show cause why such Texas or Cherokee cattle shall not be impounded until after the 1st day of October following; and after allowing the prosecuting witness and any such defendant in such warrant reasonable time to be heard, the said judge or justice shall proceed to hear and determine whether such Texas or Cherokee cattle are spreading disease; and, if they shall be so found spreading disease, it shall be the duty of such judge or justice of the peace to order the officer in charge of such cattle to impound them and keep them to themselves until after the first day of October following, when it shall be the duty of the officer in charge of such cattle to present to the owner or person in charge of such cattle a sworn statement of the costs of keeping and impounding such cattle, and demand payment of the same, together with the costs of such trial aforesaid, and upon payment of the same he shall turn over such cattle to the owner thereof, or, in his absence, to his authorized agent. But in case such owner or his agent shall refuse or neglect to pay such expense and costs, it shall be the duty of such officer to advertise, by posting written or printed notices in four of the most public places in the neighborhood, and within ten days thereafter to sell at public auction to the highest bidder such cattle, and out of the proceeds thereof pay all costs of keeping such cattle and the costs of such trial, and pay what may remain to the owner of such cattle or his agent.

SEC. 9. That Texas and Cherokee cattle, as mentioned in this act, shall be taken to mean a class or kind of cattle, without reference to where they may have come from: *Provided*, It shall not apply to section one of this act, when such Texas or Cherokee cattle shall have been introduced into either the States of Kansas, Missouri, Nebraska, Iowa, or Wisconsin, prior to the first of January, before being brought into this State; but the burden of alleging and proving that such cattle were introduced into either of the States above mentioned prior to January first, and wintered there the remainder of the winter, shall be upon the defendant: *Provided further*, That the official certificate of the county clerk of the county where such cattle have been wintered shall be *prima facie* evidence thereof.

SEC. 10. The object of this act is hereby declared to be for the purpose of preventing the spread of pestilence and disease among native cattle of this State which arise and come from that class of cattle described in this act as Texas cattle and Cherokee cattle, and to protect the native cattle of the citizens of this State from destruction from the poison, disease or sickness which it is believed is communicated from such Texas and Cherokee cattle.

SEC. 11. The act to which this act is amendatory is hereby repealed, with this saving clause, however, that in all cases where any suits are now commenced and pending in any court in this State, under the provisions of the said act, or for injuries done to any person by reason of any violation of such act, or where any indictment has been found for any violations of said act, and now still depending, that as to all such suits or indictments the said act shall remain in full force and effect until the same are finally disposed of or prosecuted to final judgment; and with this further proviso that the said act to which this is amendatory shall still remain in full force and effect for the recovery of all damage or loss which may have heretofore accrued to any person or persons by reason of any violation of said act whether such suit for the recovery of any such damage or loss may now or hereafter be commenced; and as to all such damage which may have been caused by any violation of such act, the same shall remain in full force and effect during the time limited by law for any such suits to be commenced and prosecuted to final judgment.

SEC. 12. This act shall be deemed a public act, and shall take effect from and after its passage.

SHEEP AND OTHER DOMESTIC ANIMALS.

SEC. 258. Any person who shall hereafter knowingly and wilfully bring, or cause to be brought into this State, any sheep or other domestic animals infected with contagious disease, or who shall knowingly and wilfully suffer or permit sheep or other domestic animals infected with contagious disease to run at large, shall be fined in any sum not exceeding $100 and shall be liable in a civil action for all damages occasioned thereby. (L., 1865, p. 126, secs. 1, 2.)

TO PREVENT PLEURO-PNEUMONIA AMONG CATTLE.

AN ACT to suppress and prevent the spread of pleuro-pneumonia among cattle. Approved May 31, 1881. In force July 1, 1881. Laws of 1881, p. 6; Legal News, p. 26.

SECTION 1. *Be it enacted by the people of the State of Illinois, represented in the general assembly*, That the governor of this State is hereby authorized and instructed to appoint a competent veterinary surgeon, who shall be known as State veterinarian or inspector, and whose duty it shall be to investigate any and all cases of contagious or infectious disease among domestic animals of the bovine species in this State, which may be brought to his notice by a competent veterinary surgeon or practicing physician in the locality where such infectious or contagious disease may exist, and it shall be his duty to make visits of inspection to any locality where he may have reason to suspect that contagious or infectious disease may exist.

SEC. 2. In all cases of pleuro-pneumonia among cattle in this State, the State veterinarian shall have authority to order the quarantine of infected premises, and in case such disease shall become epidemic in any locality in this State, the State veterinarian shall immediately notify the governor of the State, who shall thereupon issue his proclamation forbidding any animals of the kind among which said epidemic exists, from being transported from said locality, without a certificate from the State veterinarian showing such animals to be healthy. In case of epidemic, as aforesaid, the State veterinarian shall order the quarantine of infected premises, and shall order the slaughter of diseased animals thereon, and in cases of pleuro-pneumonia among cattle, he shall, as hereinafter provided, order the slaughter of all cattle upon the premises which have been exposed to contagion, but before doing so, he shall call in consultation with him two reputable veterinarians or practicing physicians within 10 miles of the infected premises, and shall not order the slaughter of any animals not actually diseased without a written order signed by one or both of said veterinarians or practicing physicians.

SEC. 3. Whenever it becomes necessary, as herein provided, to order the slaughter of animals, the State veterinarian shall notify the nearest justice of the peace, who shall thereupon summon three disinterested freeholders of the neighborhood as appraisers of the value of such animals; said appraisers before entering upon the discharge of their duty, shall be sworn to make a true and faithful appraisement, without prejudice or favor. They shall, after making their appraisement, return a certified copy of their valuation to the justice of the peace by whom they were summoned, who shall, after entering the same upon his record, and making an indorsement thereon, showing the same to have been properly recorded, return it, together with the order of the State veterinarian, to the person or persons owning live stock ordered slaughtered.

SEC. 4. Whenever the governor of the State shall have good reason to believe that such disease has become epidemic in certain localities in other States, or that there are conditions which render such domestic animals liable to convey disease, he shall thereupon, by proclamation, schedule such localities, and prohibit the importation of any live stock of the kind diseased into this State, unless accompanied by a certificate of health, properly signed by a duly authorized veterinary inspector. Any corporation or individual who shall transport, receive, or convey such prohibited stock, shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be fined not less than $1,000, nor more than $10,000 for each and every offense, and shall become liable for any and all damages or loss that may be sustained by any party or parties by reason of the importation or transportation of such prohibited stock.

SEC. 5. If any person or persons who shall have upon his premises any case of pleuropneumonia among cattle, and shall fail to immediately report the same to the State veterinarian, or if any person or persons shall wilfully and maliciously obstruct or resist the State veterinarian in the discharge of his duty as hereinbefore set forth, shall be deemed guilty of a misdemeanor, and upon conviction of either charge, shall be fined not less than $50, nor more than $500 for each and every such offense, and, upon conviction a second time, shall, in addition to the above-named fine be liable to not less than thirty days, nor more than six months imprisonment.

SEC. 6. The State veterinarian shall annually make a report to the governor of all matters connected with his work, and the governor shall transmit to the Department of Agriculture such parts of said report as may be of general interest to breeders of live stock, to be published with the proceedings of the State board of agriculture.

SEC. 7. All claims against the State arising from the slaughter of animals as herein provided for shall, together with the order of the State veterinarian and the award of the appraisers in each case, be submitted to the governor, and he shall, after having examined each case, if satisfied of the justness of the same, indorse thereon his order to the State auditor, who shall thereupon issue his warrant on the State treasurer for the same so ordered paid by the governor.

SEC. 8. The State veterinarian shall be entitled to receive for his services the sum of $8 per day for every day actually employed under the provisions of this act, together with his necessary traveling expenses. He shall make an itemized account to the governor, properly signed and sworn to, of the number of days he has served, and of the expenses which he has paid, and the governor shall, if satisfied that the same is right and proper, endorse thereon his order on the State auditor for the amount. The appraisers heretofore provided for shall be entitled to receive the sum of $1 each for their services, to be paid out of the treasury of their respective counties, upon certificate of the justice of the peace summoning them. The justice of the peace shall be entitled to receive the ordinary fee for issuing summons, to be paid out of the town fund in counties under township organizations, and out of the county fund in counties not under township organization. The physicians called in consultation shall be entitled to receive for their services the sum of $2 per day, and mileage at the rate of 10 cents per mile, one way; such compensation and mileage to be paid out of the veterinarian contingent fund. The State veterinarian shall have at his disposition the sum of $2,000, to be expended in disinfecting infected premises, and other incidental expenses connected with his work, for which he shall before entering upon the discharge of his duties, give bond with good and sufficient securities, in the sum of $5,000, and shall make a sworn statement to the governor of the amounts he disburses. Any part of said $2,000 not used shall lapse into the State treasury.

SEC. 9. For the purpose of carrying out the provisions of this act the sum of $8,000, or so much thereof as is necessary, is hereby appropriated out of the State treasury, to be paid as hereby provided out of any funds not otherwise appropriated.

AN ACT to revise the law in relation to the suppression and prevention of the spread of contagious and infectious diseases among domestic animals.

SECTION 1. *Be it enacted by the people of the State of Illinois, represented in the general assembly,* That the governor shall, with the advice and consent of the senate, appoint three practical stock-breeders, who shall constitute a board of live-stock commission-

ers, who shall hold their offices in the order in which they are named, the first for one year, the second for two years, and the third for three years, and their successors in office shall be appointed for three years each. Before entering on the duties of their office they shall take and subscribe to an oath of office for the faithful performance of their duties as such commissioners, and shall file the same with the governor.

SEC. 2. It shall be the duty of said board of commissioners to cause to be investigated any and all cases, or alleged cases, coming to their knowledge of contagious or infectious diseases among domestic animals, and to use all proper means to prevent the spread of such diseases, and to provide for the extirpation thereof; and in the event of reasonable ground for belief that any such contagious or infectious disease has broken out in this State, it shall be the duty of the person owning or having in charge animals infected with disease, or any other person having knowledge or reason to suspect the existence of such disease, to immediately notify said board of commissioners, or some members thereof, by communication to said board of the existence of such disease, and thereupon it shall be the duty of said board immediately to cause proper examination thereof to be made, and if said disease shall be found to be a dangerously contagious or infectious malady, said board shall order said diseased animals, and such as have been exposed to contagion, to be strictly quarantined in charge of such person as the board or any authorized member thereof shall designate, and they shall have power to order any premises or farms to be put in quarantine, so that no domestic animal which has been or is so diseased or has been exposed to such contagious or infectious disease be removed from or brought to the premises or places so quarantined; and said board shall prescribe such regulations as they may deem necessary to prevent such disease from being communicated in any way from the premises quarantined. The said board shall have power to order the slaughter of diseased animals, and in cases of contagious and infectious diseases they shall have power to order the appraisement and slaughter of all such animals as have been exposed to such contagion.

SEC. 3. The governor shall appoint a competent veterinary surgeon, who shall be known as the State veterinarian, who, together with his assistants, shall act under the direction of said board in carrying out the provisions of this act. In the event of the inability of the said State veterinarian to perform all the work which he may be directed to do by said board of commissioners, he may, by and with the advice and consent of said board, appoint necessary assistants upon terms not exceeding that paid the State veterinarian. The State veterinarian shall receive for his services the sum of $8 per day for each day actually employed under the provisions of this act, together with his necessary traveling expenses, to be certified to by said board of commissioners.

SEC. 4. Whenever said board of commissioners shall report to the governor that such diseases have become epidemic in certain localities in other States, or that their condition would render such domestic animals liable to convey diseases, he may, by proclamation, schedule such localities and prohibit the importation of any live stock of the kind diseased into this State, except under such regulations as may be prescribed by the said board and approved by the governor. Any corporation which shall knowingly transport, receive, or convey such prohibited stock shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined not less than $1,000 nor more than $10,000 for each and every offense, and shall become liable for any and all damages or loss that may be sustained by any party or parties by reason of the importation or transportation of such prohibited stock. Any individual who shall knowingly sell, buy, receive, convey, or engage in the traffic of diseased or exposed stock shall be guilty of a felony, and upon conviction thereof shall be imprisoned not less than one nor more than ten years in the penitentiary, and fined not less than $500 nor more than $5,000 for each and every offense, and shall become liable for any and all damage or loss that may be sustained by any party or parties resulting from exposure to said disease. Any veterinary practitioner having information of any such contagious or infectious disease in this State, and who shall fail to promptly report such knowledge to the board of live-stock commissioners, shall be fined not less than $100 nor more than $500, or be imprisoned in the county jail not more than one year for each offense.

SEC. 5. All cases against the State arising from the slaughter of animals as herein provided for shall be made to said board of commissioners, under such rules and regulations as they may prescribe, and it shall be the duty of said board of commissioners to determine the amount which shall be paid in each case on account of animals so slaughtered, which shall be based on the fair cash market value thereof for beef or for use for dairy purposes, not to exceed $75 per head, and report the same to the governor; but in no case shall there be anything allowed or paid for such animals as are already diseased at the time of their slaughter, and the governor shall indorse thereon his order to the State auditor, who shall thereupon issue his warrant on the State treasurer for the same.

SEC. 6. Said board of commissioners, and the State veterinarian and his assistants, in the performance of their duties under this act, shall have power to call on sheriffs, constables, and peace officers to assist them in carrying out its provisions, and it is hereby made the duty of sheriffs, constables, and peace officers in this State to assist in carrying out the provisions of this act when ordered so to do by said board of commissioners; and said commissioners and the State veterinarian and his assistants shall have, while engaged in carrying out the provisions of this act, the same powers and protection that other peace officers have.

SEC. 7. It shall be the duty of said board of commissioners to keep a record of all their acts and proceedings, and report the same to the governor annually, or oftener, if required, for publication. The annual report shall include an itemized statement of all sums expended by them under this act, including a statement of all damages recommended by them to be paid for all animals slaughtered, and the amounts paid therefor.

SEC. 8. The members of said board shall receive their necessary traveling expenses and other incidental expenses necessarily incurred in the performance of their duties under this act, to be paid on certified and itemized vouchers, to be approved by the governor.

SEC. 9. The sum of ten thousand dollars, or so much thereof as may be necessary, is hereby appropriated out of the State treasury out of any money not otherwise appropriated, for the purpose of carrying out the provisions of this act: *Provided*, That no part of this sum shall be used for the payment of damages for animals slaughtered under the provisions of this act.

SEC. 10. All acts and parts of acts inconsistent herewith are hereby repealed.

INDIANA.

Extracts from the code of the State.

SEC. 2070 (161). Whoever kills, for the purpose of sale, any sick, diseased, or injured animal, or who sells, or has in his possession with the intent to sell, the meat of any such sick or diseased or injured animal, shall be fined not more than $500 nor less than $50, to which may be added imprisonment in the county jail not more than six months.

SEC. 2071 (162). Whoever shall knowingly sell to any person or persons, or sells or delivers or brings to be manufactured to any cheese or butter manufactory in this State, any milk diluted with water or in any way adulterated, or milk from which any cream has been taken, or milk commonly known as skimmed milk; or shall keep back any part of the milk known as "strippings" with intent to defraud; or shall knowingly sell milk, the product of a sick or diseased or injured animal or animals, or any milk produced from any cow fed upon the refuse of any distillery or brewery, or upon any substance deleterious to the quality of the milk, or shall knowingly use any poisonous or any deleterious material in the manufacture of any cheese or butter, or shall knowingly sell or offer to sell any cheese or butter, in the manufacture of which any poisonous or deleterious substance has been used, shall be fined not more than $500 nor less than $50.

SEC. 2075 (168). Whoever maliciously or mischievously puts any dead animal, carcass, or part thereof, or any other putrid, nauseous, noisome, or offensive substance, upon any highway, or into, or in any manner befouls, any well, cistern, spring, brook, canal, or stream of running water, or any reservoir of water-works, of which any use is or may be made for domestic purposes, shall be fined not more than $100 nor less than $5, to which may be added imprisonment in the county jail not more than sixty days nor less than ten days.

SEC. 2102 (194). Whoever knowingly permits any horse, mare, or gelding affected with the glanders to be taken from his or her premises, or to run at large, shall be fined not more than $100 nor less than $5.

SEC. 2103 (1). Any person being the owner of sheep, or having the same in charge, who shall turn out or suffer any sheep having any contagious disease, knowing the same to be diseased, or to run at large upon any common, highway, or uninclosed ground, or who shall sell any such sheep, knowing the same to be diseased, without fully disclosing the fact to the purchaser, shall be deemed guilty of a misdemeanor, and be punished by a fine of not less than $2 nor more than $25 for each diseased sheep, to be recovered as other penalties for like offenses.

SEC. 2104 (195). Whoever drives or in any manner brings Texas or Cherokee cattle into this State at any time before the 1st day of October and after the 1st day of April in any year, and whoever purchases such cattle so driven or brought, shall be fined not more than $1,000 nor less than $100, to which may be added imprisonment in the county jail not more than one year. But nothing in this section shall be so construed as to prevent the transit of any cattle through this State on the railroads

to other States; nor shall the provisions of this section apply to any cattle that shall have been, during all the previous winter, north of the thirty-eighth degree of latitude; and in all prosecutions under this section the legal presumption shall be that such cattle had not been during all the previous winter north of the thirty-eighth parallel of latitude.

SEC. 2652 (1). In all cases where any hog, shoat, or other domestic animal shall die of the disease commonly called "hog cholera," or any other disease, it shall be the duty of the owner or owners of such hog, shoat, or other domestic animal, or the person or persons having the care and custody of the same, having knowledge of the fact, or upon receiving notice thereof, to cause the carcass of such hog, shoat, or other domestic animal, without unnecessary delay, to be burned or safely and securely buried.

IOWA.

AN ACT for the appointment of a State veterinary surgeon and defining his duties.

Be it enacted by the general assembly of the State of Iowa, The governor shall appoint a State veterinary surgeon who shall hold his office for the term of three years unless sooner removed by the governor; he shall be a graduate of some regular and established veterinary college and shall be skilled in veterinary science; he shall be a member of the State board of health, which membership shall be in addition to that now provided by law. When actually engaged in the discharge of his official duties he shall receive from the State treasury as his compensation the sum of $5 per day and his actual expenses, which shall be presented under oath and covered by written vouchers before receiving the same.

SEC. 2. He shall have general supervision of all contagious and infectious diseases among domestic animals within or that may be in transit through the State, and he is empowered to establish quarantine against animals thus diseased or that have been exposed to others thus diseased whether within or without the State, and may with the concurrence of the State board of health, make rules and regulations such as he may deem necessary for the prevention, against the spread, and for the suppression of said disease or diseases, which rules and regulations, after the concurrence of the governor and executive council, shall be published and enforced, and in doing said things or any of them, he shall have power to call on any one or more peace officers whose duty it shall be to give him all assistance in their power.

SEC. 3. Any person who wilfully hinders, obstructs, or resists said veterinary surgeon or his assistants, or any peace officer acting under him or them when engaged in the duties or exercising the powers herein conferred, shall be guilty of a misdemeanor and punished accordingly.

SEC. 4. Said veterinary surgeon shall on or before the 30th of June of each year make a full and detailed report of all and singular his doings since his last report to the governor, including his compensation and expenses, and the report shall not exceed one hundred and fifty pages of printed matter.

SEC. 5. Whenever the majority of any board of supervisors, city council, trustees of an incorporated town or township trustees, whether in session or not, shall in writing notify the governor of the prevalence of or probable danger from any of said diseases; he shall notify the State veterinary surgeon who shall at once repair to the place designated in said notice and take such action as the exigencies may demand, and the governor may in case of emergency appoint a substitute or assistants with equal powers and compensation.

SEC. 6. Whenever in the opinion of the State veterinary surgeon the public safety demands the destruction of any stock under the provisions of this act, he shall, unless the owner or owners consent to such destruction, notify the governor, who may appoint two competent veterinary surgeons as advisors, and no stock shall be destroyed except upon the written order of the State veterinary surgeon countersigned by them and approved by the governor; and the owners of all stock destroyed under the provisions of this act, except as hereinafter provided, shall be entitled to receive a reasonable compensation therefor, but not more than its actual value in its condition when condemned, which shall be ascertained and fixed by the State veterinary surgeon and the nearest justice of the peace who, if unable to agree, shall jointly select another justice of the peace as umpire, and their judgment shall be final when the value of the stock does not exceed $100, but in all other cases either party shall have the right of appeal to the circuit court, but such appeal shall not delay the destruction of the diseased animals. The State veterinary surgeon shall, as soon thereafter as may be, file his written report thereof with the governor, who shall, if found correct, indorse his finding thereon, whereupon the auditor of state shall issue his warrant therefor upon the treasurer of state, who shall pay the same out of any moneys at his disposal under the provisions of this act: *Provided*, That no compensation shall be allowed for any stock destroyed while in transit through or across this State, and that the word stock, as herein used, shall be held to include only neat cattle and horses.

SEC. 7. The governor of the State, with the State veterinary surgeon, may co-operate with the Government of the United States for the objects of this act, and the governor is hereby authorized to receive and receipt for any moneys receivable by this State under the provisions of any act of Congress which may at any time be in force upon this subject and to pay the same into the State treasury to be used according to the act of Congress and the provisions of this act as nearly as may be.

SEC. 8. There is hereby appropriated out of any moneys not otherwise appropriated the sum of $10,000, for use in 1884 and 1885, and $3,000 annually thereafter, or so much thereof as may be necessary for the uses and purposes herein set forth.

SEC. 9. Any person, except the veterinary surgeons, called upon under the provisions of this act shall be allowed and receive $2 per day while actually employed.

SEC. 10. This act being deemed of immediate importance shall be in force from and after its publication in the Iowa State *Register* and State *Leader*, newspapers published at Des Moines, Iowa.

Approved, April 14, 1884.

Extracts from the code of Iowa.

SEC. 1484. The sheriff, constable, police officer, officer of any society for the prevention of cruelty to animals or any magistrate, shall destroy any horse or other animal having the disease called and known as the glanders, or any disabled creature unfit for further use.

SEC. 4055. If the owner of sheep, or any person having the same in charge, knowingly import or drive into this State sheep having any contagious disease; or turn out or suffer any sheep having any contagious disease, knowing the same to be so diseased, to run at large upon any common, highway, uninclosed lands; or sell or dispose of any sheep, knowing the same to be so diseased, he shall be deemed guilty of a misdemeanor, and shall be punished by fine in any sum not less than $50 nor more than $100.

SEC. 4056. If any person knowingly import or bring into this State any horse, mule, or ass, affected by the diseases known as nasal gleet, glanders, or button-farcy, or suffer the same to run at large upon any common, highway, or uninclosed land, or use or tie the same in any public place, or off his own premises, or sell, trade, or offer for sale or trade, any such horse, mule, or ass, knowing the same to be so diseased, he shall be deemed guilty of a misdemeanor, and shall, on conviction, be punished by a fine of not less than $50 nor more than $500; and, in default of payment, shall be imprisoned for any period not to exceed twelve months, or by both fine and imprisonment, at the discretion of the court.

SEC. 4057. If any horse, mule, or ass, reasonably supposed to be diseased with nasal gleet, glanders, or button-farcy, be found running at large without any known owner, it shall be lawful for the finder thereof to take such horse, mule or, ass, so found, before some justice of the peace, who shall forthwith cause the same to be examined by some veterinary surgeon, or other person skilled in such diseases, and if, on examination, it is ascertained to be so diseased, it shall be lawful for such justice of the peace to order such diseased animal to be immediately destroyed and buried, and the necessary expense accruing under such provisions of this section shall be defrayed out of the county treasury.

KANSAS.

AN ACT to provide for the appointment of a State veterinary surgeon, to prescribe his duties, and fixing his compensation.

Be it enacted by the legislature of the State of Kansas, The governor, by and with the advice and consent of the senate, shall, immediately upon the passage of this act, appoint a competent and skilled veterinary surgeon for the State, who at the date of such appointment shall be a graduate in good standing of a recognized college of veterinary surgery, and who shall hold his office until his successor is appointed and qualified. The governor shall also, at the regular session of the legislature in 1887, and every two years thereafter, and during a regular session of the legislature, by and with the advice and consent of the senate, appoint a competent and skilled veterinary surgeon for the State, having the qualifications above mentioned, whose term of office shall be for two years from the first day of April next succeeding his appointment, unless sooner removed, as hereinafter provided. The veterinary surgeon for the State shall keep his office at the capital of the State, in a room to be provided by the executive council, and shall receive a salary of $2,500 per annum, payable as the salaries of State officers are paid, and actual necessary traveling expenses by him incurred and paid in the discharge of his duties, to be drawn from the treasury upon itemized accounts thereof, properly verified, rendered monthly, and approved by the governor.

The governor shall have power of removal, and shall immediately fill all vacancies which may at any time occur in the office of State veterinarian.

SEC. 2. Before entering upon the duties of his office, the State veterinarian shall take and subscribe an oath to faithfully discharge the duties of his said office, and shall execute a bond to the State of Kansas in the sum of $5,000, with good and sufficient sureties, conditioned for the faithful performance of the duties of his office, which bond and sureties thereto shall be approved by the governor, and said bond, together with his oath of office, shall be deposited in the office of secretary of state.

SEC. 3. It shall be the duty of the State veterinarian, under direction of the live-stock sanitary commission for the State, to investigate any and all cases of contagious or infectious diseases among domestic animals of the State which may come to his knowledge or be brought to the notice of the live-stock sanitary commission, and for this purpose shall visit at once any locality within the State where any such contagious or infectious disease of domestic animals may be reported to exist, and make a full and careful examination of all animals supposed to be diseased, and to inquire into the nature and cause of any such disease which he may discover, prescribe the proper care, necessary remedies, and direct the sanitary measures necessary to prevent the spread thereof, and to make a full report of his findings and doings in the premises to the live-stock sanitary commission, with recommendations and suggestions as to the means necessary to be employed to prevent the spread, and best calculated to exterminate any and all such contagious or infectious diseases by him found to exist among the domestic animals of the State.

SEC. 4. The State veterinarian shall make a continuous scientific study and investigation of all diseases of domestic animals, and the causes, preventives, and cures thereof, and report the result of his study and investigation to the secretary of the State board of agriculture, giving in plain, ordinary language the symptoms by which any such disease may be identified; how liable to be introduced and spread; the causes and conditions to which may be attributed the production of any such disease, and the sanitary and other measures best calculated to prevent the germination and spread of any such contagious or infectious disease among live stock, together with the best known treatment and remedies, also the treatment necessary in case of injury to domestic animals, in time for publication in the several reports required by law of the said State board of agriculture; and perform such other service and duties as may be required by law or directed by the live-stock sanitary commission in the interest of the State.

SEC. 5. This act shall take effect and be in force from and after its publication in the official State paper.

Approved, March 24, 1884.

CHAPTER II.—*Live-stock sanitary commission.*

AN ACT for the protection of domestic animals.

Be it enacted by the legislature of the State of Kansas, Three commissioners, to be appointed by the governor, by and with the advice and consent of the senate, shall constitute the live-stock sanitary commission of the State of Kansas. Before entering upon the duties of his office, each commissioner shall take and subscribe the oath of office, and file the same with the secretary of state, and each commissioner, before entering on the performance of his duties, shall execute a bond to be approved by the executive council, in the sum of two thousand dollars, conditioned that he will faithfully perform the duties of his office, and file the same with the secretary of state. The term of office of said commissioners shall be for the period of one, two, and three years, respectively, from the first day of April next succeeding their appointment, and the governor shall have power to fill any vacancy in said commission. Said commissioners shall elect one of their number chairman, and the State veterinarian shall be *ex officio* of said commission. The secretary shall keep a full record of the proceedings of the commission, and make such report to the governor as may from time to time be required, who may transmit the same to the secretary of the State board of agriculture for publication.

SEC. 2. It shall be the duty of the commission provided for in the first section of this act, to protect the health of the domestic animals of the State from all contagious or infectious diseases of a malignant character, and for this purpose it is hereby authorized and empowered to establish, maintain, and enforce such quarantine, sanitary and other regulations as it may deem necessary. It shall be the duty of any member of said commission, upon receipt by him of reliable information of the existence, among the domestic animals of the State, of any malignant disease, to at once notify the State veterinarian, who shall go at once to the place where any such disease is alleged to exist, and make a careful examination of the animals believed to be affected with any such disease, and ascertain if possible, what, if any, disease exists among the

live stock reported to be affected, and whether the same is contagious or infectious or not, and if said disease is found to be of a malignant, contagious, or infectious character, he shall direct the temporary quarantine and sanitary regulations necessary to prevent the spread of any such disease, and report his findings and actions to the commission.

SEC. 3. Upon the receipt by any member of this commission of the report of the State veterinarian provided for in section 2 of this act, if said member shall be of the opinion that the exigencies of this case require, he shall immediately convene the commission at such place as he may designate, and if upon consideration of the report of the veterinarian, the commission shall be satisfied that any contagious or infectious disease exists of a malignant character, which seriously threatens the health of domestic animals, they shall proceed at once to the infected district, ascertain and determine the premises or grounds infected, and establish the quarantine, sanitary, and police regulations necessary to circumscribe and exterminate such disease; also to list and describe the domestic animals affected with such disease, and those which have been exposed thereto, and included within the infected district or premises so defined and quarantined, with such reasonable certainty as would lead to their identification; and for that purpose the said commission may, in its discretion, cause the live stock so included within the quarantined lines established to be marked or branded in such manner as the commissioners may designate. And no domestic animal liable to become infected with the disease, or capable of communicating the same, shall be permitted to enter or leave the district, premises, or grounds so quarantined, except by authority of the commission. The said commission shall also from time to time give and enforce such directions, and prescribe such rules and regulations as to separating, mode of handling, treating, feeding, and caring for such diseased and exposed animals, as it shall deem necessary to prevent two classes of animals from coming in contact with each other, perfectly and isolate them from all other domestic animals which have been exposed thereto, and which are susceptible of becoming infected with the disease. And the said commission, or any of the members thereof, and said veterinarian, are hereby authorized and empowered to enter upon any grounds or premises to carry out the provisions of this act.

SEC. 4. When in the opinion of the commission it shall be necessary, to prevent the further spread of any contagious or infectious disease among the live stock of the State, to destroy animals affected with or which have been exposed to any such disease, it shall determine what animals shall be killed, and appraise the same as hereinafter provided, and cause the same to be killed and the carcasses disposed of as in its judgment will best protect the health of the domestic animals of the locality.

SEC. 5. Whenever, as in the fourth section of this act provided, the commission shall direct the killing of any domestic animal or animals, it shall be the duty of the commissioners to appraise the animal or animals to be killed, and shall make an inventory of the animal or animals condemned, and in fixing the value thereof the commissioners shall be governed by the value of said animal or animals at the date of appraisement: *Provided*, That no animal or animals shall be appraised except those affected with contagious pleuro-pneumonia of cattle, or foot-and-mouth disease, or such as have been exposed thereto.

SEC. 6. When the commission shall have determined the quarantine and other regulations necessary to prevent the spread among domestic animals of any malignant, contagious, or infectious disease found to exist among the live stock of the State, and given its order, as hereinbefore provided, prescribing quarantine and other regulations, it shall notify the governor thereof, who shall issue his proclamation, proclaiming the boundary of such quarantine, and the orders, rules, and regulations prescribed by the commission, which proclamation may be published by written or printed handbills posted within the boundaries or on the lines of the district, premises, places, or grounds quarantined, or by being published in the official State paper: *Provided*, That if the commission decide that it is not necessary, by reason of the limited extent of the district in which such disease exists, that a proclamation should be issued, then none shall be issued; but such commission shall give such notice as may to it seem best to make the quarantine established by it effective.

SEC. 7. The commission provided for in this act shall have power to employ at the expense of the State such persons, and purchase such supplies and material, as may be necessary to carry into full effect all orders by it given, as hereinbefore provided: *Provided*, That no labor shall be employed, nor material or supplies purchased by the commission, except such additional labor, material, and supplies as may be necessary to carry into effect thequarantine and other regulations prescribed by the commission.

SEC. 8. It shall be the duty of the railway corporations doing business in this State to cleanse and disinfect the cars used by them in transporting stock in this State at such times and places as the commission may designate, whenever in the opinion or the commission any such order may be necessary to prevent the spread of infectious or contagious diseases. Any such corporation violating any of the provisions of this

section shall be liable to a penalty of $500 for each offense, to be recovered in a civil action to be prosecuted under the direction of the attorney-general, in the name of the State of Kansas.

SEC. 9. When any animal or animals are killed under the provisions of this act by order of the commission, the owner thereof shall be paid therefor the appraised value as fixed by the appraisement hereinbefore provided for: *Provided*, The right of indemnity on account of animals killed by order of the commission, under the provisions of this act, shall not extend to the owner of animals which have been brought into the State in a diseased condition, or from a State, county, Territory, or district in which the disease with which the animal is infected, or to which it has been exposed, exists. Nor shall any animal be paid for by the State which may be brought into the State in violation of any law or quarantine regulation thereof, or the owner of which shall have violated any of the provisions of this act, or disregarded any rule, regulation, or order of the live-stock sanitary commission, or any member thereof. Nor shall any animal be paid for by the State which came into the possession of the claimant with the claimant's knowledge that such animal was diseased or was suspected of being diseased, or of having been exposed to any contagious or infectious disease. Nor shall any animal belonging to the United States be paid for by the State.

SEC. 10. It shall be the duty of any owner or person in charge of any domestic animal or animals who discovers, suspects, or has reason to believe that any of his domestic animals, or domestic animals in his charge, are affected with any contagious or infectious disease, to immediately report such fact, belief, or suspicion to the commission, or any member thereof, and to the sheriff and county clerk of the county in which such domestic animal is found; and it shall be the duty of any person who discovers the existence of any contagious or infectious disease among the domestic animals of another, to report the same at once to the sheriff and county clerk of the county in which such domestic animal is found.

SEC. 11. The sheriff to whom the existence of any infectious or contagious disease of domestic animals is reported, shall forthwith proceed to the place where such domestic animal is and examine the same, and forthwith report the result of such examination to the commission, or any member thereof, and shall prescribe such temporary quarantine regulations as will prevent the spread of the contagion or infection until the live stock sanitary commission can provide and order suitable quarantine rules and regulations.

SEC. 12. Any person who shall knowingly bring into this State any domestic animal which is affected with any contagious or infectious disease, or any animal which has been exposed to any contagious or infectious disease, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined in any sum not less than $500 nor more than $5,000.

SEC. 13. Any person who owns, or is in possession of, live stock which is, or which is suspected or reported to be affected with any infectious or contagious disease, who shall refuse to allow the State veterinarian, or other authorized officer or officers to examine such stock, or shall hinder or obstruct the State veterinarian, or other authorized officer or officers, in any examination of, or in an attempt to examine, such stock, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined in any sum not less than $100 nor more than $500.

SEC. 14. Any person who shall have in his possession any domestic animal affected with any contagious or infectious disease, knowing such animal to be so affected, or after having received notice that such animal is so affected, who shall permit such animal to run at large, or who shall keep such animal where other domestic animals not affected by or previously exposed to such disease may be exposed to its contagion or infection, or who shall sell, ship, drive, trade, or give away such diseased animal or animals which have been exposed to such infection or contagion, or who shall move or drive any domestic animal in violation of any direction, rule, regulation, or order establishing and regulating quarantine, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined in any sum not less than $100, nor more than $500 for each of such diseased or exposed domestic animals which he shall permit to run at large, or keep, or sell, ship, drive, trade, or give away in violation of the provisions of this act: *Provided*, That any owner of any domestic animal which has been affected with or exposed to any contagious or infectious disease may dispose of the same, after having obtained from the State veterinarian a bill of health for such animal.

SEC. 15. When any live stock shall be appraised and killed by order of the commission, it shall issue to the owner of the live stock so killed a certificate, showing the number and kind of animals killed, and the amount to which the holder is entitled, and report the same to the auditor of State. And upon presentation of such certificate to the auditor, he shall draw his warrant on the treasurer for the amount therein stated, payable out of any money appropriated for the payment of such claims.

SEC. 16. The provisions of this act shall not be construed to include any other than contagious and infectious diseases, nor shall it be construed as to interfere in any

manner with the provision of chapter one hundred and forty-four, session laws of eighteen hundred and eighty-three.

SEC. 17. The members of the commission, appointed by the governor as hereinbefore provided, shall receive $5 per day for the time by them necessarily employed in the discharge of the duties required by this act. And each member of the commission hereinbefore provided for shall receive the actual necessary traveling expenses by him incurred, and paid in the discharge of the duties required of him by the provisions of this act, which said per diem and expenses shall be drawn from the treasury on the warrant of the auditor, to be issued on the filing in his office of an itemized account thereof, properly verified.

SEC. 18. Whenever the governor of the State shall have good reason to believe that any dangerous, contagious, or infectious disease has become epizootic in certain localities in other States, Territories, or countries, or that there are conditions which render such domestic animals from such infected districts liable to convey such disease, he shall, by proclamation, prohibit the importation of any live stock of the kind diseased into the State, unless accompanied by a certificate of health, given by a duly authorized veterinary inspector; and all such animals arriving in this State shall be examined without delay by the State veterinary surgeon, and, if deemed necessary, placed in close quarantine until all danger of infection is passed, when they shall be released by the order of the veterinary surgeon or the live-stock commission.

SEC. 19. That the owners of any stock-yards doing business in this State, when requested by the live-stock sanitary commission, shall appoint and keep constantly in their employ at their expense a competent inspector of live stock, whose duty it shall be to daily inspect with care all animals brought into the stock-yards in whose employ any such inspector may be; and upon the discovery by such inspector, in such yards, of any animal affected with any malignant, contagious, or infectious disease, he shall direct the manner in which any such diseased animal shall be disposed of so as to prevent the spread of any such contagious or infectious disease, and for this purpose may cause any such diseased animals to be killed and the carcasses to be disposed of at the expense of the owner thereof, in such manner as will prevent the spread of any such disease; but in no event shall any such diseased stock be permitted to be driven or shipped out of any such stock-yards except to some rendering establishmentor other suitable place for killing and disposing of such diseased animal as hereinbefore provided, and then under such regulations and restrictions as may be necessary to prevent the spread of the disease on account of which any such animals have been condemned: *Provided,* That the owner of any animal or animals ordered to be destroyed by any inspector shall have the right to appeal from any decision of such inspector to the State veterinarian of the State live-stock sanitary commission; and during the pending of such appeal the condemned animals shall be kept in strict quarantine at the expense of the owner thereof; unless the State veterinarian shall decide such stock is not so diseased, then said expenses shall be paid by the owners of said stock-yards: *And provided further,* That no compensation shall be made by the State to owners of diseased live stock found in public stock-yards and destroyed as herein provided. The inspector of live stock in any stock-yards in this State shall, on demand of the owner of any live stock passing through any such stock-yards, furnish to said owner a bill of health for any live stock by him inspected as hereinbefore required and found to be healthy.

SEC. 20. The commissioners shall have the power to call upon any sheriff, under sheriff, deputy sheriff, or constable, to execute their orders, and such officers shall obey the orders of said commissioners, and the officers performing such duties shall receive compensation therefor as is prescribed by law for like services, to be paid as other expenses of said commission as hereinbefore provided; and any officer may arrest on view, and take before any magistrate of the county, any person found violating the proyjsions of this act, and such officers shall immediately notify the county attorney of such arrest, and he shall prosecute the person so offending according to law.

SEC. 21. Except as otherwise provided in this act any person who shall violate, disregard, or evade, or attempt to violate, disregard, or evade, any of the provisions of this act, or who shall violate, disregard, or evade, or attempt to violate, disregard, or evade any of the rules, regulations, orders, or directions of the live-stock sanitary commission establishing and governing quarantine, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined in any sum not less than one hundred nor more than five thousand dollars.

SEC. 22. The provisions of this act shall not apply to sheep and hogs, except when affected or exposed to foot-and-mouth disease, or to cattle when affected by the disease known as Spanish or Texas fever.

SEC. 23. For the purposes of this act each member of the live-stock sanitary commission is hereby authorized and empowered to administer oaths and affirmations.

SEC. 24. This act shall take effect and be in force from and after its publication once in the official State paper.

Approved, March 24, 1884.

CHAPTER III.

AN ACT relating to Texas cattle, and to amend section 1, chapter 145, Laws of 1883, and provide penalty for the violation thereof.

Be it enacted by the Legislature of the State of Kansas, Section one of the act to which this is amendatory is hereby amended so as to read as follows: That portion of the State of Kansas unoccupied by domestic cattle, and bounded as follows: Commencing at a point on the south line of the State of Kansas, where the range line between ranges twenty and twenty-one west crosses said south line of the State of Kansas; thence running north on said range line to a point where said line intersects the Arkansas River; thence westward along the south bank of the Arkansas River to where the range line between ranges twenty-four and twenty-five west crosses the said Arkansas River; thence north on the said Arkansas River; thence north on the said range line to the township line between townships twenty-four and twenty-five south; thence west along said township line to a point where said township line crosses the range line between ranges twenty-six and twenty-seven west; thence north on said range line to a point where said line crosses the township line between town ships fifteen and sixteen south; thence west along said township line to a point where said township line crosses the range line between ranges thirty and thirty-one west; thence north along said range line to a point where said range line crosses the township line between townships five and six south; thence west along said township line to a point where said township line crosses the range line between ranges thirty-six and thirty-seven west; thence north on said range line to the north line of the State of Kansas; thence west on the said north line of the State of Kansas to the northwest corner of the said State; thence south on the west line of the State of Kansas to the southwest corner of the State of Kansas; thence east along the south line of the State of Kansas to the place of beginning, is hereby set apart as a quarantine ground, upon which ground Texas cattle, or cattle liable to communicate Texas, splenic, or Spanish fever to the domestic stock of this State, having come to this State from the country south of this State, between the first day of March and the first day of November of each year, may be permitted to range under the care of keepers or herdsmen: *Provided*, That no person or persons shall drive or cause to be driven any of said cattle upon the claims or premises owned or occupied by any settler without his consent in writing. Any person violating any of the provisions of this act, either by allowing said Texas cattle to enter upon any lands outside of the Territory herein set apart as quarantine grounds, or in any other manner, shall, on conviction, be adjudged guilty of a misdemeanor, and shall be fined not less than $100 and not more than $500, or be imprisoned in the county jail not less than thirty days and not more than one year, or both such fine and imprisonment, and shall be held liable for all damages that may be done by said cattle, either by communicating disease or in any other manner, and the person or persons so injured shall have a lien on the cattle so doing the damage.

SEC. 2. Section one of chapter one hundred and forty-five, laws of eighteen hundred and eighty-three, is hereby repealed.

SEC. 3. This act shall take effect and be in force from and after its publication in the official State paper.

Approved, March 22, 1884.

CHAPTER IV.

AN ACT for the protection of cattle against Texas, splenic, or Spanish fever.

Be it enacted by the legislature of the State of Kansas, That the live-stock sanitary commission shall have power to create and enforce quarantine against the disease known as Texas, splenic, or Spanish fever in any of the unorganized counties of the State. In so doing it shall have the power, and, as far as possible, follow the terms of law and requirements of the law creating the commission.

SEC. 2. This act shall be in force and take effect from and after its publication in the official State paper.

Approved, March 24, 1884.

CHAPTER V.

AN ACT authorizing the live-stock sanitary commission to co-operate with the Federal authorities, and accepting the provisions of an act of Congress to provide for the suppression of contagious diseases among domestic animals.

Be it enacted by the legislature of the State of Kansas, That the live-stock sanitary commission be authorized and directed to co-operate with the Commissioner of Agriculture of the United States, or any officer or authority of the General Government, in the suppression and extirpation of any and all contagious diseases among domestic animals,

and in the enforcement and execution of any and all acts of Congress to prevent the importation or exportation of diseased cattle, and the spread of infectious or contagious diseases among domestic animals.

SEC. 2. That this act shall take effect and be in force from and after its publication in the official State paper.

Approved, March 24, 1884.

CHAPTER VI.

AN ACT for the creation of a fund to defray the expenses and per diem of the live-stock sanitary commission of the State of Kansas, and for the payment of such claims as may arise against the State through its official action, as the same is provided in the act creating said commission; for the payment of salaries and necessary expenses incurred by the State veterinarian, as is provided for in the act creating such office.

Be it enacted by the legislature of the State of Kansas, That for the purpose of creating a fund to defray the expenses and per diem of the live-stock sanitary commission of the State of Kansas, and for the payment of such claims as may arise against the State through its official action as the same is provided in the act creating said commission; and for the payment of salary and necessary expenses incurred by the State veterinarian as is provided in the act creating such officer, there is hereby levied, and the proper officers shall collect as other taxes are collected, a tax upon all property in the State subject to taxation, two-tenths of one mill on each dollar on the taxable property in the State for the fiscal year ending June 30, 1885.

SEC. 2. This act shall take effect and be in force from and after its publication in the official State paper.

Approved, March 24, 1884.

CHAPTER CXCI.—Protection of cattle against disease.

AN ACT for the protection of cattle against Texas, splenic, or Spanish fever, and repealing chapter 3 of the Special Laws of 1884.

Be it enacted by the legislature of the State of Kansas, No person or persons shall, between the first day of March and the first day of December, of any year, drive or cause to be driven into or through any county or part thereof in this State, or turn upon or cause to be turned or kept upon any highway, range, common, or uninclosed pasture within this State, any cattle capable of communicating or liable to impart what is known as Texas, splenic, or Spanish fever. Any person violating any provision of this act shall upon conviction thereof be adjudged guilty of a misdemeanor, and shall for each offense be fined not less than $100 and not more than $2,000, or be imprisoned in the county jail not less than thirty days and not more than one year, or by both such fine and imprisonment.

SEC. 2. It shall the duty of any sheriff, under-sheriff, deputy sheriff, or constable within this State, upon a complaint made to him by any citizen of the State, or otherwise having notice or knowledge that there are within the county where such officer resides, cattle believed to be capable of communicating or liable to impart the disease known as Texas, splenic, or Spanish fever, to forthwith take charge of and restrain such cattle under such temporary quarantine regulations as will prevent the communication of such disease, and make immediate report thereof to the live-stock sanitary commission; and such officer shall keep said cattle in custody as aforesaid until released by order of said live-stock sanitary commission, and no officer who shall take or detain any cattle under the provisions of this act shall be liable to the owner or owners of such cattle for any damages by reason of such taking or detention, or by reason of the performance of any other duty enjoined in this act.

SEC. 3. Whenever the live-stock sanitary commission shall determine that certain cattle within the State are capable of communicating or are liable to impart Texas, splenic, or Spanish fever, they shall issue their order to the sheriff or any constable of the county in which said cattle are found, commanding him to take and keep such cattle in his custody, subject to such quarantine regulations as they may prescribe, until the 1st day of December next ensuing, on which date they shall direct such officer to deliver said cattle to their owner or owners, or his or their agent: *Provided, however*, That before any cattle so held shall be delivered as aforesaid, there shall be paid to said live-stock sanitary commission all the costs and expenses of taking, detaining, and holding said cattle; and in case such costs and expenses are not so paid within ten days after the said 1st day of December, the said officer shall advertise in the same manner as is by law provided in cases of sale of personal property, that he will sell such cattle or such portions thereof as may be necessary to pay such costs and expenses and the expenses of sale, and shall forthwith pay over to the live-stock sanitary commission any amount so received in excess of the legal fees and expenses of such officer. Any officer performing any of the duties enjoined in this section or in the next preceding section of this act shall receive the same compensation there-

for as is prescribed by law for similar services, to be paid as other expenses of said live-stock sanitary commission are paid as provided by law.

SEC. 4. Any person or persons violating any of the provisions of this act shall be liable to any party injured through such violation for any damages that may thereby arise from the communication of Texas, splenic, or Spanish fever, to be recovered in a civil action; and the party so injured shall have a lien for damages on the cattle so communicating the disease.

SEC. 5. In the trial of any person charged with the violation of any of the provisions of this act, and in the trial of any civil action brought to recover damages for the communication of Texas, splenic, or Spanish fever, proof that the cattle which such person is charged with driving or keeping in violation of the law, or which are claimed to have communicated the said disease, were brought into this State between the first day of March and the first day of December of the year in which the offense was committed or such cause of action arose, from south of the thirty-seventh parallel of north latitude, shall be taken as *prima facie* evidence that such cattle were capable of communicating and liable to impart Texas, splenic, or Spanish fever, within the meaning of this act, and that the owner or owners, or person in charge of such cattle had full knowledge and notice thereof at the time of the commission of the alleged offense: *Provided, however,* That if the owner or owners, or person in charge of such cattle, shall show by such certificate or certificates as shall hereafter be designated by the live stock sanitary commission of this State, that the said cattle had been kept since the first day of December of the previous year west of the east line of the Indian Territory and north of the thirty-sixth parallel of north latitude, or west of the twenty-first meridian of longitude west from Washington and north of the thirty-fourth parallel of north latitude, the provisions of this section shall not apply thereto: *Provided, also,* That the provisions of this section shall not apply to cattle which are owned or kept in this State and which may drift across the south line of the State when the said cattle are gathered in a general round-up and returned under the direction of any live-stock association of this State.

SEC. 6. Whenever two or more persons shall in violation of this act, at the same time or at different times during the same year, drive or cause to be driven upon the same highway, range, common, or pasture within this State, any cattle capable of communicating, or liable to impart Texas, splenic, or Spanish fever, they shall be jointly and severally liable for all damages that may arise from the communication of such disease at any time thereafter during the same year to any native, domestic, or acclimated cattle that shall have been upon the same highway, range, common, or pasture so previously traveled over by such first-mentioned cattle.

SEC. 7. Justices of the peace within their respective counties shall have criminal jurisdiction in all cases arising under the provisions of this act.

SEC. 8. It shall be the duty of the prosecuting attorney of the proper county to prosecute on behalf of the State all criminal cases arising under this act.

SEC. 9. Chapter three of the laws of eighteen hundred and eighty-four, and all other acts or parts of acts in conflict with any of the provisions of this act, are hereby repealed.

SEC. 10. This act shall take effect from and after its first publication in the official State paper.

Approved, March 7, 1885.

KENTUCKY.

[Extract from the code of the State.]

SEC. 5. If the owner of any distempered cattle shall permit them to run at large outside of his inclosure, or shall drive the same into or through any part of this Commonwealth, unless it be from one portion of his own inclosure to another, he shall forfeit and pay the sum of $10 for each head; and when any such cattle shall die, the owner thereof shall cause them to be burned or buried; and, if he fail, he shall be fined $5 for each offense.

SEC. 6. If a justice of the peace be informed, by affidavit, that the owner of such cattle as are described in the preceding section has violated its provisions, it shall be his duty to issue his order, in the name of the Commonwealth, to such owner, commanding him to impound them; and if he fail or refuse to do so, or permit them to escape, or to be taken from the pound before the disease has been removed, he shall have power to order the cattle to be killed and burned at the expense of the owner.

CHAPTER 324.

AN ACT in relation to infectious and contagious diseases of cattle.

SECTION 1. *Be it enacted by the general assembly of the Commonwealth of Kentucky,* Whenever any contagious or infectious disease affecting cattle shall exist in this State, it shall be the duty of the State board of health to take measures to suppress the same promptly and effectively to prevent the same from spreading.

SEC. 2. For such purpose the State board of health shall have power: to issue their proclamation, stating that infectious or contagious disease exists in any county or counties of the State, and warning all persons to seclude all animals in their possession that are affected with such disease, or have been exposed thereto, and ordering all persons to take such precautions against the spreading of such disease as the nature thereof may, in their judgment, render necessary or expedient; to order that any premises, farm or farms, where such disease exists, or has existed, be put in quarantine at the owner's expense, so that no cattle be removed from or brought to the premises so quarantined, and to prescribe such regulations concerning the mode of quarantine as they may judge necessary or expedient to prevent infection or contagion being communicated in any way from the places so quarantined; to call on the sheriffs and deputy sheriffs to assist in enforcing and carrying out the provisions of said proclamations and orders, whose duty it shall be to observe and obey all of said orders and proclamations; to employ a veterinary surgeon and practitioner and such other persons as may be necessary from time to time, in performing their duties as set forth in the provisions of this act; and to prescribe regulations for the destruction of such animals so affected, and for the proper disposition of their hides and carcasses and of all objects which might convey infection or contagion, at the owner's expense: *Provided*, That no animal shall be destroyed by said board unless first examined by a veterinary practitioner acting in the employ or under the direction of said board, or unless the owner thereof knows that such cattle is so affected. Said board shall also have power to prescribe regulations for the disinfection of all premises, buildings, and railway cars, and all objects by or from which infection may take place or be conveyed, to alter, modify, cancel, or withdraw any of said proclamations, orders, or regulations whenever they may deem it proper so to do.

SEC. 3. Any person knowingly transgressing, violating or failing to comply with the terms of any proclamation, order, or regulation issued or prescribed by the board, shall be guilty of a misdemeanor, and on indictment be fined in a sum not less than two hundred nor more than one thousand dollars; and any person or persons, being the owner of any cattle affected with the contagious disease known as pleuro-pneumonia, and knowing the same to be so affected, who fails to kill and bury or burn them, or fails to report the same at once to the State board of health, shall be fined for each offense in a sum not less than two hundred nor more than one thousand dollars, in the discretion of the jury; and the said board, upon the failure of any such person to immediately kill said diseased cattle when ordered by the board so to do, shall have the right to kill the same at the owner's expense.

SEC. 4. Any person bringing cattle into this Commonwealth having the said disease, pleuro-pneumonia, and knowing or having reasonable grounds to believe the same to be so affected, shall be deemed guilty of a felony, and on indictment and conviction be confined in the penitentiary not less than one nor more than four years, in the discretion of the jury.

SEC. 5. Any person being the owner of cattle affected with pleuro-pneumonia, and knowing the same to be so affected, or knowing the same to have been exposed thereto, who drives or causes the same to be driven upon a public highway, or sells or transfers the same to another, shall, on indictment and conviction, be fined in a sum not less than two hundred nor more than one thousand dollars, in the discretion of the jury.

SEC. 6. The State board of health shall have the power to employ a veterinarian who shall be a regular practitioner and a graduate of some college of veterinary surgery and practice, whose duty it shall be to render such services under this act as the board may direct. Said veterinarian shall be entitled for the services rendered to a sum not exceeding five dollars per day and traveling expenses for the time he is actually engaged at work for said board, to be paid by the county court of the county in which the disease is prevailing. The veterinarian shall receive nothing from any other person for examinations and work done at the instance of said board, and in the event he does, he shall, upon indictment and conviction, be fined in a sum not less than two hundred nor more than one thousand dollars, in the discretion of the jury.

SEC. 7. In order to effectually carry out the provisions and intentions of this act, the said board may engage and obtain the services of any veterinarian in the employ of the Federal Government of the United States and otherwise co-operate with the proper department of said Federal Government in the suppression of said disease in this Commonwealth.

SEC. 8. The governor shall, in addition to the number of persons now on said State board of health, appoint three discreet and intelligent housekeepers engaged in the cattle business, whose duty it shall be to serve on said board, without any charge for services, but said three persons shall only have the right and power to act thereon with reference to matters embraced in this act.

SEC. 9. If any person shall be convicted of a violation of the third, fourth, or fifth sections of this act, the jury shall have power to determine by their verdict whether

or not such person is at the time of his trial and conviction the owner of any cattle which have been exposed to said disease by having been within the same inclosure with a diseased animal within four months next before the trial, and if they find he has such cattle, they will find the number, sex, and distinguishing marks, and it shall be the duty of the court to order the destruction of said cattle by the sheriff at the owner's expense, and the expense thereof shall be taxed as costs in the case.

SEC. 10. In order the more effectually to stamp out said disease in this Commonwealth, and to encourage those persons whose cattle may be affected therewith or exposed thereto to make the same known, the sum of $3,000 is appropriated out of any money that may be in the treasury not otherwise appropriated, for which sum the auditor shall, at the request of the State board of health, draw his warrant in their favor upon the treasurer; said board may use said sum, or any part of it, in their discretion for the purchase and the destruction of any cattle which may have been exposed to said disease, but which do not actually have the same, and if all of said sum is not so used they shall return the remainder to the treasury.

SEC. 11. In purchasing said cattle said board shall in no case pay more than $30 for any one animal, nor shall they pay for any cattle whose owner has concealed the existence of said disease among his cattle, or on his premises, or has in any way by intentional act, or by willful neglect, contributed to the spread of the disease.

SEC. 12. Should said disease make its appearance hereafter in any portion of the State where it has not heretofore existed, the governor, if the general assembly is not in session, shall have the power to direct the application by said board of a sum not exceeding $3,000 for the purpose of paying for such cattle as may be exposed to but not actually affected by said disease, upon the conditions and limitations hereinbefore prescribed, and such other conditions and limitations as he may prescribe; said sum upon the written order of the governor shall be paid to said board out of the treasury upon the warrant of the auditor: *Provided*, That the whole appropriation made by this bill shall not exceed $6,000.

SEC. 13. The board of health shall keep and report to the general assembly an itemized account of their expenditures under this act.

SEC. 14. Whenever the State board of health shall have information of the existence of pleuro-pneumonia in any other State or country, they shall have power to quarantine against the cattle of such State or locality to prevent the importation of said disease into this Commonwealth upon such terms and conditions as the said board may prescribe.

SEC. 15. The veterinarian selected by the State board of health shall be known as the State veterinarian.

SEC. 16. This act shall take effect from and after its passage.

Passed March —, 1886.

MAINE.

[Abstract from Chapter 14 of the revised statutes of the State of Maine.]

Contagious diseases among cattle.

SEC. 37. The municipal officers of towns shall cause all cattle therein infected with lung murrain or pleuro-pneumonia, or any other contagious disease, or which have been exposed to infection, to be secured or collected in some suitable place or places therein, and kept isolated; and when taken from the possession of their owners one-fifth of the expense thereof shall be paid by the town, and four-fifths by the State, such isolation to continue so long as the existence of such disease or other circumstances render it necessary; or they may direct the owners thereof to isolate such cattle upon their own premises, and any damage or loss sustained thereby shall be paid as aforesaid.

SEC. 38. Within twenty-four hours after the municipal officers have notice of the existence of such disease, or have reason to believe that it exists, they shall cause the suspected animals to be examined by a veterinary surgeon or physician by them selected, and if they are adjudged diseased, said officers may order them to be killed and buried forthwith at the expense of such town.

SEC. 39. When so killed they shall cause them to be appraised by three competent and disinterested men under oath, at their value at the time of the appraisal, and the same shall be paid as provided in section 37.

SEC. 40. They may prohibit the departure of cattle from any inclosure, and exclude cattle therefrom.

SEC 41. They may, in writing, regulate or prohibit the passage from, to, or through their towns, or from place to place therein, of any neat cattle, and may arrest and detain at the cost of the owners all cattle found passing in violation of such regulations, and may take all other necessary measures for the enforcement of such prohibition, and for preventing the spread of such disease in their towns and the immediate vicinity thereof.

SEC. 42. Such regulations shall be recorded in the records of their towns, and shall be published in said towns in such manner as said regulations provide.

SEC. 43. Whoever sells or disposes of any animal infected or known to have been exposed to infection, within one year after such exposure, without the knowledge or consent of the municipal officers, shall be fined not exceeding $500, or be imprisoned not exceeding one year.

SEC. 44. Whoever disobeys the orders of said municipal officers, made in conformity with sections 40 and 41, or drives or transports any neat cattle contrary to the regulations so made, recorded, and published, shall be punished as provided in section 43.

SEC. 45. Whoever knows or has reason to suspect the existence of any fatal contagious disease among the cattle in his possession or under his care, shall forthwith give notice thereof to the municipal officers, and for failure to do so shall be punished as provided in section 43.

SEC. 46. Any town whose officers neglect or refuse to carry into effect the provisions of sections 37 to 43, inclusive, forfeits not exceeding $500 for each day's neglect.

SEC. 47. Appraisals made under section 39 shall be in writing, and signed by the appraisers, and shall be certified by the municipal officers to the governor and council, and to the treasurer of their towns.

SEC. 48. The municipal officers of towns may, when they deem it necessary to carry into effect the purposes of this chapter, take and hold possession for a term not exceeding one year, of any land within their towns without buildings other than barns thereon, for inclosing and isolating any cattle, and they shall cause the damages sustained by the owners in consequence thereof, to be appraised by the assessors thereof, and they shall further cause a description of such land, setting forth the boundaries thereof, and the area as nearly as may be estimated, together with said appraisal, to be entered in the records of the town. The amount of said appraisal shall be paid as provided in section 37 in such sums, and at such times as they may order. If such owner is dissatisfied with the appraisal, he may, in an action on the case, recover from the town a fair compensation for the damages sustained by him; but no costs shall be taxed, unless the damages recovered in such action, exclusive of interest, exceed the appraisal of the assessors. The State shall reimburse the town four-fifths of any sum so recorded.

SEC. 49. Whenever such disease exists in a town the municipal officers shall forthwith give notice thereof to the governor and secretary of the board of agriculture; but if commissioners have been appointed as hereinafter provided, such notice shall be given to them.

SEC. 50. The governor may, when he deems it expedient, appoint commissioners with power to make all necessary regulations, and to issue summary orders for the treatment and extirpation of any contagious disease among cattle, and may direct the municipal officers to enforce and carry them into effect; and any such officer or other person refusing or neglecting to enforce, carry out, and comply with any regulations of such commissioners shall be fined as provided in section 43.

SEC. 51. All such regulations made and published by said commissioners shall, while in force, supersede the regulations made by the municipal officers.

SEC. 52. All losses, damages, and reasonable expenses sustained in consequence of the execution of the orders of said commissioners shall be appraised as provided in section thirty-nine and paid as provided in section thirty-seven.

SEC. 53. Such commissioners shall keep a record of their doings, and make report of thereof to the legislature on or before the tenth day of January biennially, unless sooner required by the governor; and such record, or an abstract thereof, shall be printed in the annual volume of transactions of the State board of agriculture. They shall receive reasonable compensation for services rendered in the discharge of their duties, to be audited and allowed by the governor and council.

SEC. 54. The governor, with the advice and consent of council may terminate the commission when, in his judgment, the public safety permits.

SEC. 55. Sections thirty-seven to fifty-four, inclusive, apply to horses infected with glanders, or any other contagious disease.

AN ACT to amend section thirty-seven of chapter fourteen of the revised statutes relating to contagious diseases among cattle.

Be it enacted by the senate and house of representatives in legislature assembled as follows, Section thirty-seven of chapter fourteen of the revised statutes is hereby amended by inserting after the word "cattle" in the first and ninth lines of said section the words "swine and sheep," so that said section as amended shall read as follows:

"SEC. 37. The municipal officers of towns shall cause all cattle, swine and sheep therein infected with lung-murrain, pleuro-pneumonia, or any other contagious disease, or which have been exposed to infection, to be secured or collected in some suitable place or places therein, and kept isolated, and when taken from the possession of their owners, one-fifth of the expense thereof shall be paid by the town and four-fifths by

the State, such isolation to continue so long as the existence of such disease or other circumstances render it necessary, or they may direct the owners thereof to isolate such cattle, swine, and sheep upon their own premises, and any damage or loss sustained thereby shall be paid as aforesaid."

Approved March 4, 1885.

MARYLAND.

AN ACT to prevent the spread of infectious or contagious diseases among the live stock of this State.

SECTION 1. *Be it enacted by the general assembly of Maryland,* That it shall be the duty of the governor of the State to take measures to promptly suppress any contagious or infectious disease which may make its appearance among the live stock of this State, and to prevent it from spreading.

SEC. 2. *And be it enacted,* That for such purpose the governor shall appoint a veterinary inspector, who shall be a graduate in good standing of some recognized school of veterinary medicine, who shall hold his office and be paid a salary not exceeding $1,000 and traveling expenses, in the discretion of the governor, whose duty it shall be to visit the stables of the city and counties wherever he has reason to believe contagious or infectious diseases may exist, and he may visit any such stable at any hour of the day, between sunrise and sunset, and shall have power, with the consent of the governor, to order all animals which have been exposed to such contagion or infection to be secluded in such manner as the nature thereof may, in his judgment, render necessary to prevent the spreading of such disease; to order that any premises, farm, or farms, stables, or railway cars, where such disease exists, or has existed, be put in quarantine, so that no domestic animal shall be removed from or brought to the premises or places so quarantined until the same shall have been properly disinfected; to prescribe such regulations as he may judge necessary or expedient to prevent infection or contagion being communicated in any way from the places so quarantined; to call upon all sheriffs and deputy sheriffs, constables, policemen, or any officers of the State, the city of Baltimore, or of any county, for information and assistance to carry out and enforce the provisions of such orders and regulations; to prescribe regulations for the destruction of animals affected with infectious and contagious diseases, and for the proper destruction of their hides and carcasses, and of all objects which might carry infection or contagion; provided that no animal shall be destroyed unless first examined by such veterinary inspector; to prescribe regulations for the disinfection of all premises, buildings, and railway cars, and of all objects from which, or by which, infection or contagion may take place or be conveyed; to alter and modify from time to time, as he may deem expedient, the terms of all such orders and regulations, and to cancel or withdraw the same at any time; to order all or any animals coming into the State to be detained at any place or places, for the purpose of inspection and examination, which he may suspect to be affected with contagious or infectious diseases, provided, that animals coming from a neighboring State that have been quarantined and discharged, shall not be subject to the provisions of this act; and it shall be the duty of all sheriffs and deputy sheriffs, constables, policemen, or other officers of the State, city of Baltimore, or counties, to obey and observe all orders and instructions which they may receive from the said veterinary inspector in the enforcement of the provisions of this act within their respective jurisdictions.

SEC. 3. *And be it enacted,* That any person who shall transgress the terms or requirements of any order or regulation issued and prescribed by the said veterinary inspector with the consent of the governor, under the authority of this act, or shall refuse to said veterinary inspector or his assistants access to his or their premises, farms, or stables, or shall conceal the fact that contagious or infectious diseases exist on his premises, shall be deemed guilty of a misdemeanor.

SEC. 4. *And be it enacted,* That any person who shall sell or otherwise dispose of an animal which he knows, or has reason to believe, is affected by any contagious or infectious disease, or has been exposed to the same within ninety days, or shall permit the same to pass over or upon any public highway, street, lane, or alley of this State, without the consent of said veterinary inspector or assistant, shall, on conviction thereof, be fined not less than $50 nor more than $100 for each animal.

SEC. 5. *And be it enacted,* That in the event of any building or buildings, sheds, or stables being reported to the governor by said inspector as being incapable of proper disinfection, it shall be his duty to have such premises appraised, in a similar manner as prescribed in the succeeding section for appraisement of diseased animals, and destroyed, and the owner thereof paid by the comptroller as herein provided for payment for animals slaughtered.

SEC. 6. *And be it enacted,* That in the event of its being deemed necessary by the said veterinary inspector to prevent the spread of contagious infection to cause any

animal or animals diseased to be slaughtered, the value of such animal or animals shall be appraised, in their then condition, by two sworn appraisers, to be sworn before any officer authorized to administer oaths and affirmations, one of which to be appointed by the owner of such animal or animals, the other by said veterinary inspector; or in case the said owner shall neglect or refuse to name such appraiser, then by two appraisers to be appointed by said veterinary inspector, who, in case of disagreement, shall call in a third; which said appraisement shall be returned to the comptroller by said veterinary inspector, and the comptroller shall forthwith issue his warrant to the treasurer for the amount of the appraisement of such animals as shall have been slaughtered, in favor of the said owner or owners.

SEC. 7. *And be it enacted*, That whenever, in the judgment of said veterinary inspector, animals which have been exposed to any infectious or contagious diseases cannot be safely quarantined or isolated, so as to prevent the spread of such infection or contagion, he may, with the consent of the governor, cause such animals to be appraised and slaughtered, and the comptroller shall pay the owner of such animals their full appraised value, when such appraisement shall have been approved by the governor: *Provided, however*, That if the owner or owners of such animals or buildings shall not be satisfied with said appraisement, he or they may, within sixty days, appeal to the circuit court of the county, or to the Baltimore city court, if such animals or buildings are within the city of Baltimore, which appeals shall be acted on by said court in the same manner as appeals from justices of the peace.

SEC. 8. *And be it enacted*, That all the necessary expenses incurred under the direction or by the authority of the governor in carrying out the provisions of this act, including the salary and traveling expenses of said veterinary inspector, shall not exceed the sum of $10,000 in any two years, and the sum of $10,000, or so much thereof as may be necessary, is hereby appropriated to be applied as herein directed under the order or orders of the governor; and the comptroller is hereby directed to issue his warrant upon the treasurer for such sums as may be required upon any order of the governor, as aforesaid.

SEC. 9. *And be it enacted*, That in the event of the outbreak of an epidemic or contagious and infectious disease among the live stock of this State, it shall be the duty of the governor to appoint such assistants to said inspector as may be necessary to promptly suppress such epidemic, and to fix their pay.

SEC. 10. *And be it enacted*, That all acts or parts of acts inconsistent herewith be, and the same are hereby, repealed.

SEC. 11. *And be it enacted*, That this act shall take effect from the date of its passage.

Approved March 31, 1884.

MASSACHUSETTS.

Of contagious diseases among cattle, horses, and other domestic animals.

SECTION 1. The mayor and aldermen of cities and the selectmen of towns, in case of the existence in this Commonwealth of the disease called pleuro-pneumonia among cattle, or farcy or glanders among horses, or any other contagious or infectious disease among domestic animals, shall cause the animals in their respective cities and towns which are infected or which have been exposed to infection, to be secured or collected in some suitable place or places within their cities or towns and kept isolated, and when taken from the possession of their owners, one-fifth of the expense of their maintenance shall be paid by the city or town wherein the animal is kept, and four-fifths by the Commonwealth; such isolation to continue so long as the existence of such disease or other circumstances may render it necessary.

SEC. 2. The mayor and aldermen and selectmen respectively, when any such animal is adjudged by a veterinary surgeon or physician by them selected to be infected with any contagious disease, may in their discretion order such diseased animal to be forthwith killed and buried at the expense of such city or town.

SEC. 3. They may cause all such animals to be appraised by three competent and disinterested men under oath, at the value thereof at the time of the appraisement, and the amount of the appraisement shall be paid as provided in section 1.

SEC. 4. They may, within their respectivs cities and towns, prohibit the departure of animals from any inclosure or exclude animals therefrom.

SEC. 5. They may make regulations in writing to regulate or prohibit the passage from, to, or through their respective cities or towns, or from place to place within the same, of any cattle or other domestic animals, and may arrest and detain, at the cost of the owners thereof, all animals found passing in violation of such regulations, and may take all other necessary measures for the inforcement of such prohibition, and also for preventing the spread of any disease among the animals in their respective cities and towns and the immediate vicinity thereof.

SEC. 6. Such regulations shall be recorded upon the records of their cities and

towns, respectively, and shall be published in such cities and towns in such manner as may be provided in such regulations.

SEC. 7. They may cause every animal infected with any such disease, or which has been exposed thereto, to be forthwith branded upon the rump with the letter P; and no animal so branded shall be sold or disposed of, except with the knowledge and consent of such mayor and aldermen and selectmen. A person who, without such knowledge and consent, sells or disposes of an animal so branded, or sells or disposes of an animal known to be affected with such disease, or to have been exposed thereto within one year previous to such sale or disposal, shall be punished by fine not exceeding $500 or by imprisonment not exceeding one year.

SEC. 8. Any person disobeying the orders of the mayor and aldermen or selectmen, made in conformity with section 4, or driving or transporting any animals contrary to the regulations made, recorded, and published, as aforesaid, shall be punished by fine not exceeding $500 or by imprisonment not exceeding one year.

SEC. 9. Whoever knows or has reason to suspect the existence of any such disease among the animals in his possession or under his care shall forthwith give notice thereof to the mayor and aldermen of the city, or selectmen of the town where such animals are kept, and for failure so to do, shall be punished by fine not exceeding $500, or by imprisonment not exceeding one year.

SEC. 10. A city or town whose officers neglect or refuse to carry into effect the provisions of the first seven sections shall forfeit a sum not exceeding $500 for each day's neglect.

SEC. 11. The mayor and aldermen of cities, and selectmen of towns, when in their judgment it is necessary to carry into effect the purposes of this chapter, may, within their respective cities and towns, take and hold for a term not exceeding one year any land, without buildings other than barns thereon, upon which to inclose and isolate any animals; and they shall cause the damages sustained by the owner in consequence of such taking and holding to be appraised by the assessors of the city or town wherein the lands so taken are situated; and they shall further cause a description of such land, setting forth the boundaries thereof, and the area as nearly as may be estimated, together with said appraisement, to be entered on the records of the city or town. The amount of said appraisement shall be paid as provided in section 1, in such sums and at such times as the mayor and aldermen or selectmen respectively may order. If the owner of land so taken is dissatisfied with said appraisement he may, by action of contract, recover of the city or town wherein the lands lie a fair compensation for the damages sustained by him; but no costs shall be taxed unless the damages recovered in such action, exclusive of interest, exceed said appraisement. And the Commonwealth shall reimburse to the city or town four-fifths of any sum recovered of it in any such action.

SEC. 12. The governor, with the advice and consent of the council, may appoint a board of cattle commissioners of not more than three members when in his judgment the public safety may permit it. The compensation of such commissioners shall not exceed $4 per day for actual service in addition to their traveling expenses necessarily incurred.

SEC. 13. When such commissioners make and publish any regulations concerning the extirpation, cure, or treatment of animals infected with or which have been exposed to any contagious disease, such regulations shall supersede those made by mayors and aldermen and selectmen, and mayors and aldermen and selectmen shall carry out and enforce all orders and directions of the commissioners to them directed.

SEC. 14. Such commissioners shall have all the power and authority herein conferred upon mayors and aldermen and selectmen, and, in addition, may establish a hospital or quarantine, with proper accommodations, wherein any animals selected by them may be detained and treated by veterinary surgeons or physicians; and for this purpose the commissioners may take any lands and buildings in the manner provided in section 11.

SEC. 15. Mayors and aldermen and selectmen, within twenty-four hours after they have notice that any domestic animals in their respective cities and towns are infected with or have been exposed to any contagious disease, shall give notice thereof in writing to the commissioners.

SEC. 16. The commissioners may make all necessary regulations for the treatment, cure, and extirpation of such disease, and may direct mayors and aldermen and selectmen, respectively, to enforce and carry into effect all such regulations as may from time to time be made for that end; and any such officer who refuses or neglects to enforce and carry out any regulation of the commissioners shall be punished by fine not exceeding $500 for every such offense.

SEC. 17. The commissioners, when in their judgment the public good requires it, may cause to be killed and buried any domestic animals which are infected with or have been exposed to such disease, and, except as provided in the following section, shall cause such animals to be appraised in the manner provided in section 3, and the

appraised value of such animals shall be paid, one-fifth by the cities or towns in which such animals were kept, and the remainder by the Commonwealth.

SEC. 18. In all cases of farcy or glanders the commissioners, having condemned the animal infected therewith, shall cause such animal to be killed without an appraisement, but may pay the owner an equitable sum for the killing and burial thereof.

SEC. 19. A person who fails to comply with a regulation made or an order given by the commissioners shall be punished by fine not exceeding $500, or by imprisonment not exceeding one year.

SEC. 20. Prosecutions under the preceding section may be maintained in any county. (1860, 221, sec. 11.)

SEC. 21. All appraisements made under this chapter shall be in writing and signed by the appraisers and certified by the mayor and aldermen or selectmen or commissioners, respectively, to the governor and council, and to the treasurers of the several cities and towns wherein the cattle appraised were kept.

SEC. 22. The commissioners may examine under oath all persons believed to possess knowledge of material facts concerning the existence or dissemination, or danger of dissemination, of diseases among domestic animals, and for this purpose shall have all the powers vested in justices of the peace to take depositions, and to compel witnesses to attend and testify by chapter 169. All costs and expenses incurred in procuring the attendance of such witnesses shall be allowed and paid to the commissioners from the treasury of the Commonwealth, upon being certified to and approved by the governor and council.

SEC. 23. When animals exposed to contagious diseases are killed by order of the commissioners, and upon a *post mortem* examination are found to have been entirely free from disease, the commissioners shall cause the same to be sold under their direction, first giving to the purchaser notice of the facts; and if the said purchaser or any other person sells said slaughtered animals or any part thereof, he shall in like manner give notice to the parties to whom such sales are made; and the proceeds of the sales made by order of the commissioners shall be applied in payment of the appraised value of said animals.

SEC. 24. Whoever violates any of the provisions of the preceding section shall be punished by fine not exceeding $100 and the costs of prosecution.

SEC. 25. Cattle commissioners, now or hereafter appointed, shall keep a full record of their doings, and report the same to the legislature on or before the 10th day of January in each year, unless sooner required by the governor, and an abstract of the same shall be printed in the annual report of the State board of agriculture.

SEC. 26. No Texan, Mexican, Cherokee, Indian, or other cattle which the cattle commissioners decide may spread contagious disease, shall be driven on the streets of any city, town, or village, or on any road in this Commonwealth, nor shall they be driven outside of the stock-yards connected with any railway within this Commonwealth, between the first day of March and the first day of November.

SEC. 27. In all stock-yards within the Commonwealth, said Texan, Mexican, Cherokee, Indian, or other cattle which the cattle commissioners decide may spread contagious disease, shall be kept in different pens from those in which other cattle are kept, from the first day of March until the first day of November.

SEC. 28. Any person or persons violating any provision of the two preceding sections shall be punished by fine of not less than $20 nor more than $100.

AN ACT concerning contagious diseases among cattle.

Be it enacted, &c., as follows: It shall be the duty of the cattle commissioners to make inquiries and gather facts and statistics in relation to the prevalence among the neat stock of this State of the disease known as abortion, the annual losses caused thereby, and its effect on the healthfulness of milk as an article of food.

SEC. 2. To ascertain the real character of the disease, its cause, and the best methods of its cure or prevention, the commissioners may make, or cause to be made, experiments, investigations, and examinations, and for this purpose shall have and exercise all the powers conferred upon them in cases of contagious disease by the provisions of section 14 of chapter 90 of the public statutes.

SEC. 3. The commissioners for the purpose of aiding them in their investigations may kill any animal affected with said disease, and such animal shall be paid for as provided in section 17 of chapter 90 of the public statutes. Said commissioners shall make a detailed statement in their annual report of their doings under the provisions of this act.

SEC. 4. There shall be allowed and paid out of the treasury a sum not exceeding two thousand dollars, to be expended as may be necessary in carrying out the provisions of this act.

SEC. 5. This act shall take effect upon its passage.

Approved, May 13, 1884.

MICHIGAN.

AN ACT to provide for the appointment of a live stock sanitary commission and a State veterinarian, and to prescribe their powers and duties, and to prevent and suppress contagious and infectious diseases among the live stock of the State.

SECTION 1. *The people of the State of Michigan enact,* That a commission is hereby established which shall be known under the name and style of "The State Live-Stock Sanitary Commission." The commission shall consist of three commissioners, who are practical agriculturists and engaged in the live stock industries of the State, who shall be appointed by the governor with the advice and consent of the senate. One shall be appointed for the term of six years, one for the term of four years, and one for the term of two years, whose term of office shall commence on the second Tuesday of July of the year in which they are appointed, and shall continue until their successors are appointed and qualified. And at each succeeding biennial session of the legislature there shall be appointed in like manner one commissioner who shall hold his office six years or until his successor is appointed and qualified. The governor shall also appoint, with the advice and consent of the Senate, a competent and skilled veterinary surgeon for the State, who, at the time of such appointment, shall be a graduate in good standing of a recognized college of veterinary surgery, and who shall hold his office for two years from the second Tuesday of July of the year he is appointed, and until his successor is appointed and qualified. The governor shall also appoint every two years thereafter a competent and skilled veterinarian having the qualifications above mentioned, whose term of office shall be for two years or until his successor is appointed and qualified.

SEC. 2. Said commissioners and veterinary surgeon before they enter upon the duties of their office shall each take and subscribe the constitutional oath of office and file the same with the secretary of state.

SEC. 3. Each commissioner shall receive the sum of $3 per day and necessary expenses for the time actually spent in the discharge of his duties; and the veterinary surgeon shall receive the sum of $5 per day and necessary expenses for time when employed.

SEC. 4. It shall be the duty of the commission to protect the health of the domestic animals of the State from all contagious or infectious diseases of a malignant character, and for this purpose it is hereby authorized and empowered to establish, maintain, and enforce such quarantine, sanitary, and other regulations as it may deem necessary.

SEC. 5. It shall be the duty of any person who discovers, suspects, or has reason to believe that any domestic animal belonging to him, in his charge, or that may come under his observation, belonging to other parties, is affected with any disease, whether it be a contagious and infectious disease, to immediately report such fact, belief, or suspicion to the health officer, president, or clerk of the local board of health.

SEC. 6. It shall be the duty of the local board of health to keep a record of all cases in a suitable book provided for that purpose, which record shall include a statement of the age, sex, and distinguishing characteristics of the animal; and further, it shall be the duty of said local board of health, or any member thereof, to immediately examine, either in person or by a qualified person appointed by said board, all animals reported to be diseased; and if they or their agents find that such animal or animals are affected with a contagious or infectious disease, to immediately report the same to the commission or some member thereof; and the said local board of health shall promptly take such measures as it shall deem expedient and necessary to prevent the spread of the disease, until the commission shall be able to relieve it from the charge or care of such animal or animals. All expenses incurred by said local board of health and its agents in carrying out the provisions of this act, shall be paid in the same manner as are those of the commission.

SEC. 7. The commission or any member thereof to whom the existence of any infectious or contagious disease of domestic animals is reported shall forthwith proceed to the place where such domestic animal or animals are and examine the same, and if in his or their opinion any infectious or contagious disease does exist, he or they shall prescribe such temporary quarantine and regulations as will prevent the spread of the contagion or infection, and notify the State veterinarian, who shall forthwith proceed to the place where said contagious or infectious disease is said to exist and examine said animal or animals and report his or their finding to the said commission, who then shall prescribe such rules and regulations as in their judgment the exigencies of the case may require for the effectual suppression and eradication of the disease, and for that purpose the said commission may list and describe the domestic animals affected with such disease and those which have been exposed thereto and included within the infected district or premises, so defined and quarantined with such reasonable certainty as would lead to their identification, and no domestic animal liable to become infected with the disease or capable of communicating the same shall be per-

mitted to enter or leave the district, premises, or grounds so quarantined, except by the authority of the commission. The said commission shall also, from time to time, give and enforce such directions, and prescribe such rules and regulations as to separating, mode of handling, treating, feeding and caring for such diseased and exposed animals as it shall deem necessary to prevent the two classes of animals from coming in contact with each other, and perfectly isolate them from all other domestic animals which have not been exposed thereto and which are susceptible of becoming infected with the disease, and the said commission and veterinarian are hereby authorized and empowered to enter upon any grounds or premises to carry out the provisions of this act. When in the opinion of the commission it shall be necessary to prevent the further spread of any contagious or infectious disease among the live stock of the State, to destroy animals affected with, or which have been exposed to any such disease, it shall determine what animals shall be killed, and appraise the same, as hereinafter provided, and cause the same to be killed and the carcasses disposed of as in their judgment will best protect the health of the domestic animals of the locality.

SEC. 8. When the commission shall have determined the quarantine and other regulations necessary to prevent the spread among domestic animals of any malignant, contagious, or infectious disease found to exist among the live stock of the State, and given their order as hereinbefore provided, prescribing quarantine and other regulations, it shall notify the governor thereof, who shall issue his proclamation proclaiming the boundary of such quarantine and the orders, rules, and regulations, prescribed by the commission, which proclamation may be published by written or printed handbills posted within the boundaries or on the lines of the district, premises, places, or grounds quarantined: *Provided*, That if the commission decide that it is not necessary, by reason of the limited extent of the district in which such disease exists, that a proclamation should be issued, then none shall be issued, but such commission shall give such notice as may to it seem best to make the quarantine established by it effective.

SEC. 9. Whenever the commission shall direct the killing of any domestic animal or animals it shall be the duty of the commissioners to appraise the animal or animals condemned, and in fixing the value thereof, the commissioners shall be governed by the value of said animal or animals at the date of appraisement.

SEC. 10. Whenever any live stock shall be appraised and killed by order of the commission, it shall issue to the owner of the stock so killed a certificate showing the number and kind of animals killed, and the amount in their judgment to which the owner is entitled, and report the same to the governor of the State, which certificate, if approved by the governor, shall be presented to the auditor general, who shall draw his warrant on the State treasurer for the amount therein stated, payable out of any money in the treasury not otherwise appropriated.

SEC. 11. When any animal or animals are killed under the provisions of this act by order of the commission, the owner thereof shall be paid therefor the appraised value, as fixed by the appraisement hereinbefore provided for: *Provided*, The right of indemnity on account of animals killed by order of the commission under the provisions of this act, shall not extend to the owners of animals which have been brought into the State in a diseased condition, or from a State, country, Territory, or district in which the disease with which the animal is affected, or to which it has been exposed, exists. Nor shall any animal be paid for by the State which may be brought into the State in violation of any law or quarantine regulation thereof, or the owner of which shall have violated any of the provisions of this act, or disregarded any rule, regulation, or order of the live-stock sanitary commission or any member thereof. Nor shall any animal be paid for by the State which came into the possession of the claimant with the claimant's knowledge that such animal was diseased, or was suspected of being diseased, or of having been exposed to any contagious or infectious disease.

SEC. 12. Any person who shall have in his possession any domestic animal affected with any contagious or infectious disease, knowing such animal to be so affected, or after having received notice that such animal is so affected, who shall permit such animal to run at large, or who shall keep such animal where other domestic animals not affected by or previously exposed to such disease may be exposed to its contagion or infection, or who shall sell, ship, drive, trade, or give away such diseased animal or animals which have been exposed to such infection or contagion, or who shall move or drive any domestic animal in violation of any direction, rule, or regulation, or order establishing and regulating quarantine, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined in any sum not less than $10 nor more than $500 for each of such diseased or exposed domestic animals which he shall permit to run at large, or keep, sell, ship, drive, trade, or give away in violation of the provisions of this act: *Provided*, That any owner of any domestic animal which has been affected with or exposed to any contagious disease may dispose of the same, after having obtained from the State veterinarian a certificate of health for such animal.

SEC. 13. Any person who shall knowingly bring into this State any domestic animal which is affected with any contagious or infectious disease, or any animal which

has been exposed to any contagious or infectious disease, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined in any sum not less than $100 nor more than $5,000.

SEC. 14. Any person who owns or is in possession of live stock which is affected, or which is suspected or reported to be affected, with any infectious or contagious disease, who shall willfully prevent or refuse to allow the State veterinarian or commissioner or other authorized officer or officers to examine such stock, or shall hinder or obstruct the State veterinarian or other authorized officer or officers in any examination of or in an attempt to examine such stock, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined in any sum not less than $10 nor more than $500.

SEC. 15. Any person who shall willfully violate, disregard, or evade, or attempt to violate, disregard, or evade any of the provisions of this act, or who shall willfully violate, disregard, or evade any of the rules, regulations, orders, or directions of the live-stock sanitary commission establishing and governing quarantine shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined in any sum not less than $10 nor more than $500.

SEC. 16. The commission provided for in this act shall have power to employ at the expense of the State such persons and purchase such supplies and material as may be necessary to carry into full effect all orders by it given.

SEC. 17. The commissioners shall have power to call upon any sheriff, under sheriff, deputy sheriff, or constable to execute their orders, and such officers shall obey the orders of said commissioners, and the officers performing such duties shall receive compensation therefor as is prescribed by law for like services, and shall be paid therefor in like manner. And any officer may arrest and take before any justice of the peace of the county any person found violating any of the provisions of this act, and such officer shall immediately notify the prosecuting attorney of such arrest, and he shall prosecute the person so offending according to law.

SEC. 18. Whenever the governor of the State shall have good reason to believe that any dangerous, contagious, or infectious disease has become epizootic in certain localities in other States, Territories, or countries, or that there are conditions which render such domestic animals from such infected districts liable to convey such disease, he shall by proclamation prohibit the importation of any live stock of the kind diseased into the State, unless accompanied by a certificate of health given by a duly authorized veterinary surgeon; and all such animals arriving in this State shall be examined immediately by the commission, or some member thereof, and if he or they deem necessary he or they shall have said animals inspected by the State veterinary surgeon, and if in his opinion there is any danger from contagion or infection, they shall be placed in close quarantine until such danger of infection or contagion is passed, when they shall be released by order of said commission or some member thereof.

SEC. 19. For the purposes of this act each member of the live-stock sanitary commission is hereby authorized and empowered to administer oaths and affirmations.

SEC. 20. This commission is hereby authorized and required to co-operate with any board or commission acting under any present or future act of Congress for the suppression and prevention of contagious or infectious diseases among domestic animals, and the same right of entry, inspection, and condemnation of diseased animals upon private premises is granted to the United States board or commission as is granted to the commission granted under this act.

SEC. 21. The commission shall make biennially a detailed report of its doings to the governor, which report shall be transmitted to the legislature at its regular biennial session.

SEC. 22. Nothing in the provisions of this act shall be construed so as to include sheep or horses.

Ordered to take immediate effect.

Approved, June 10, 1885.

AN ACT to regulate and provide for the carrying, yarding, and feeding of so called Texas cattle while in transit into or across this State between the 1st day of April and the 1st day of November of each year.

[Act No. 198, laws of 1885.]

SECTION 1. *The people of the State of Michigan enact,* That it shall not be lawful to transport any neat cattle into or across this State, yard or feed the same, that have been reared or kept south of the thirty-sixth parallel of north latitude, and that have not subsequently been kept continuously at least one winter north of said parallel, and which may be brought within the limits of this State between the 1st day of April and the 1st day of November following, except in the manner hereinafter provided.

SEC. 2. It shall be the duty of all railroad companies doing business in this State to receive and transport while in this State the class of cattle mentioned in section 1, only in cars that are branded or lettered legibly and distinctly, and in plain view, the words, "For the transportation of Texas cattle only;" and they shall not permit or allow any other class of cattle to enter those cars between the 1st day of April and the 1st day of November following: *Provided*, That cattle coming from other States for transportation through this State, when it is impossible to ascertain where they came from, may be shipped in such cars, but shall be treated in all respects as coming from the country south of the thirty-sixth parallel of north latitude.

SEC. 3. It shall be the duty of any railroad company, stock-yard company, or private individual owning and operating any stock-yard in this State, to receive and feed the class of cattle mentioned in section 1 only in yards separate and apart from yards used for feeding or yarding of other cattle; and these yards shall be in the immediate vicinity and contiguous to a railroad side-track, so that these cattle may not pass over any open common that might be crossed by other cattle, and said yard shall have a sign posted at each entrance thereto, on which shall be plainly lettered, "For the yarding of Texas cattle only;" and no other cattle shall be admitted to these yards between the 1st day of April and the 1st day of November of each year.

SEC. 4. Any railroad company, stock-yard company, or private individual owning any stock-yard in this State, who shall violate any of the provisions of sections 1 and 2 of this act, shall forfeit and pay to the people of the State of Michigan not less than $50 nor more than $500 for each and every such offense, and shall be liable for any and all damages caused to any neat cattle by their failure to comply with the requirements of this act.

SEC. 5. Any person or persons who shall knowingly or willfully place or attempt to place any neat cattle, or other than those mentioned in section 1, in any car or yard provided for in section two or three of this act, and branded and lettered as therein provided for between the 1st day of April and the 1st day of November following, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be fined not less than $10 nor more than $100, or be imprisoned not less than ten days nor more than sixty days, or both such fine and imprisonment, in the discretion of the court. This act shall not prevent the driving of cattle direct to slaughter-houses from the cars or pens.

Approved, June 16, 1885.

§ 2133. SEC. 1. *The people of the State of Michigan enact*, That it shall not be lawful for the owner of sheep, or any person having the same in charge, knowingly to import or drive into this State sheep having any contagious disease, and any person so offending shall be deemed guilty of a misdemeanor and shall be punished by fine in any sum not less than $50, and in default of the payment thereof by imprisonment in the county jail not more than three months.

SEC. 2. That any person being the owner of sheep or having the same in charge, who shall turn out, or suffer any sheep having any contagious disease, knowing the same to be diseased, to run at large upon any common, highway, or uninclosed lands, or who shall sell or dispose of any sheep, knowing the same to be so diseased, without first apprising the purchaser thereof of such disease, shall be deemed guilty of a misdemeanor, and shall be punished by fine in any sum not less than $50, nor more than $100, and in default of the payment thereof by imprisonment in the county jail not more than three months.

SEC. 3. Nothing in this act shall be so construed as to prevent the recovery of damages, in civil actions, against any person or persons who shall import or drive such diseased sheep into this State, or who shall allow such diseased sheep to run at large, or who shall sell such diseased sheep.

Protection against foot-rot in sheep.

§ 2136. SEC. 1. *The people of the State of Michigan enact*, That it shall be unlawful for any person or persons to allow to run at large on, or to drive along any highway in this State, between the 1st day of May and the 1st day of November of each year, any sheep known to be infected with the disease known as the foot-rot.

SEC. 2. Any person or persons violating the provisions of the foregoing section shall be deemed guilty of a misdemeanor, and on conviction thereof, shall pay a fine of not less than $25, nor more than $100, in the discretion of the court, in addition to the costs of prosecution, and in case the fine imposed and the costs of prosecution shall not be paid the defendant shall be confined in the county jail not less than thirty days nor more than sixty days, in the discretion of the court.

MINNESOTA.

AN ACT to prevent the spread of contagious and infectious diseases among cattle, horses, and other domesticated animals.

Be it enacted by the legislature of the State of Minnesota, The local boards of health of towns, villages, and cities in case of existence in this State of the disease called pleuropneumonia among cattle, or farcy or glanders among horses, or any contagious or infectious disease among domestic animals, shall cause the animals in their respective towns, villages, or cities which are infected, or which have been exposed to infection, to be secured or collected in some suitable place or places within their respective towns, villages, or cities, and kept isolated, and when taken from the possession of their owners one-fifth of the expense of their maintenance shall be paid by the town, village, or city wherein the animal is kept, and four-fifths by the State; such isolation to continue as long as the existence of such disease or other circumstances may render it necessary.

SEC. 2. The said local boards of health when any such animal is adjudged by a veterinary surgeon or physician, by them selected, to be infected with any contagious or infectious disease, may in their discretion order such diseased animal to be forthwith killed and buried at the expense of such town, village, or city.

SEC. 3. The said local boards of health may cause all such animals that have been within the State for six months next preceding the adjudication mentioned in section 2 to be appraised by three competent and disinterested men under oath, at the value thereof at the time of the appraisement. And in making such appraisement the appraisers shall take into consideration the fact of the existence of such disease in such animals, and the amount of the appraisement shall be paid as provided in section 1, except as provided in section 15 of this act.

SEC. 4. The said local boards of health may, within their respective towns, villages, and cities, prohibit the departure of animals from any inclosure, or exclude animals therefrom.

SEC. 5. The said local boards of health may make regulations in writing to regulate or prohibit the passage from, to, or through their respective towns, villages, or cities, or from place to place within the same, of any cattle or other domestic animals, and may arrest and detain, at the cost of the owners thereof, all animals found passing in violation of such regulations, and may take all necessary measures for the enforcement of such prohibition, and also for preventing the spread of any disease among the animals to their respective town, village, or city, and the immediate vicinity thereof.

SEC. 6. Such regulations shall be recorded upon the records of their respective towns, villages, and cities, and shall be published in such towns, villages, and cities in such manner as may be provided in such regulations.

SEC. 7. Any person disobeying the orders of said local boards of health, made in conformity with the preceding provisions, or driving or transporting any animals contrary to the regulations made, recorded, and published as aforesaid, shall be punished by a fine of not less than $100 nor exceeding $500, or by imprisonment of not less than thirty days nor exceeding one year.

SEC. 8. Whoever knows or has reason to suspect the existence of any such disease among the animals in his possession, or under his care, shall forthwith give notice thereof to the local boards of health of the town, village, or city where such animals are kept, and for failure so to do shall be punished by a fine of not less $50, nor exceeding $500, or by imprisonment of not less than thirty days nor more than one year.

SEC. 9. Any member of any local board of health who neglects or refuses to carry into effect the preceding provisions shall be punished by a fine of not less than $100 nor more than $500 for each day's neglect.

SEC. 10. When the State board of health make and publish any regulations concerning the extirpation, care, or treatment of animals infected with, or which have been exposed to any contagious disease, such regulations shall supersede those made by the local boards of health; and said local boards of health shall carry out and enforce all orders and directions of the State board of health to them directed.

SEC. 11. The State board of health shall have all the power and authority herein conferred upon local boards of health.

SEC. 12. The local boards of health, within twenty-four hours after they have notice that any domestic animals in their respective towns, villages, and cities are infected with or have been exposed to any such disease, shall give notice thereof in writing to the State board of health.

SEC. 13. The State board of health may make all necessary regulations for the quarantine of such animals and extirpation of such disease, and may direct local boards of health to enforce and carry into effect all such regulations as may from time to time be made for that end; and any member of any local board of health who refuses or

neglects to enforce or carry out any regulation of the State board of health, shall be punished by a fine of not less than $100 nor more than $500 for every offense.

SEC. 14. The State board of health, when in their judgment the public requires it, may cause to be killed and buried any domestic animals which are infected with or have been exposed to such disease; and, except as provided in the following section, shall cause such animals to be appraised in the manner provided above; and the appraised value of such animal shall be paid one-fifth by the town, village, or city in which such animals were kept, and the remainder by the State.

SEC. 15. In all cases of farcy or glanders the State board of health, having condemned the animal infected therewith, shall cause such animal to be killed without an appraisement or compensation to the owner thereof, but may pay the owner an equitable sum for the killing and burial thereof.

SEC. 16. Any person who fails to comply with the regulation made or an order given by the State board of health shall be punished by fine not exceeding $500 or by imprisonment not exceeding one year.

SEC. 17. All appraisement made shall be in writing and signed by the appraisers, and certified by the local boards of health or State board of health, respectively, to the governor and to the treasurer of the several towns, villages, and cities wherein the cattle appraised were kept.

SEC. 18. The State board of health may examine under oath all persons believed to possess knowledge of material facts concerning the existence or dissemination or danger of dissemination of diseases among domestic animals; and for this purpose shall have all the powers vested in justices of the peace to take depositions and to compel witnesses to attend and testify. All costs and expenses incurred in producing the attendance of such witnesses shall be certified by the State board of health, and paid from the treasury of the State, upon being certified to, and approved by the governor.

SEC. 19. Whenever animals exposed to contagious diseases, or killed by an order of the State board of health, and upon a *post mortem* examination are found to have been entirely free from disease, the State board of health shall cause the same to be sold under their direction, first giving to the purchaser notice of the facts; and, if said purchaser, or any other person, shall sell said slaughtered animals, or any part thereof, he shall in like manner give notice to the parties to whom such sales are made, and the proceeds of the sales made by order of the State board of health, shall be applied in payment of the appraised value of said animals.

SEC. 20. Whoever violates any of the provisions of the preceding section shall be punished by fine not exceeding $100, and the cost of prosecution.

SEC. 21. The State board of health shall keep a full record of their doings, and report the same to the legislature unless sooner required by the governor.

SEC. 22. The State board of health may by order require any two or more local boards of health to act together for the purposes of this act.

SEC. 23. The sum of $3,000, or so much thereof as necessary, is hereby annually appropriated for the payment of expenses incurred by the State in enforcing this act; said expenses to be approved by the State board of health and by the governor.

SEC. 24. This act shall take effect and be in force from and after its passage.

Approved, March 7, 1885.

MISSOURI.

AN ACT providing for the appointment of a State veterinary surgeon, defining his duties and fixing his compensation.

Be it enacted by the general assembly of the State of Missouri, as follows: The board of curators of the State university and dean of the agricultural college of the State of Missouri are hereby authorized and empowered to appoint a veterinary surgeon to aid and assist in developing and protecting the live-stock interests of the State of Missouri. Said veterinary surgeon shall be of recognized professional skill and ability, and shall be a graduate of some reputable veterinary college or school, and shall hold his position at the will and pleasure of said board of curators and dean, as hereinafter provided.

SEC. 2. Said veterinary surgeon shall reside at or near the agricultural farm of the State of Missouri, and shall have his office in said college building, and when not engaged as otherwise provided in this act he shall devote his time to the investigation of the nature, causes of, and remedies for, diseases of horses, mules, cattle, swine, and other domestic animals, and shall teach the knowledge thus obtained to the students of said agricultural college.

SEC. 3. Said veterinary surgeon shall be under the control of the curators of the State University and dean of the agricultural college, who may remove said surgeon whenever in their judgment the good of the State may demand it.

SEC. 4. It shall be lawful for any ten freeholders, residents of this State, to go before any clerk of a court of record or justice of the peace, and demand the presence and services of said veterinary surgeon, in the following form and manner:

STATE OF MISSOURI,
County of ———, *ss:*

To the dean of the agricultural college, Columbia, Mo:

We, the undersigned citizens, freeholders of the county of ———, believe that there exists in this locality a dangerous infectious disease among (here name the kind of stock). Therefore we request the immediate presence of the State veterinary surgeon.

——— ———. [SEAL.]
——— ———. [SEAL.]

Which petition may be certified to in the following manner:

STATE OF MISSOURI,
County of ———, *ss:*

I hereby certify that the above-named petitioners are known to me to be reputable citizens of this county.

(Signed by the clerk of said court of justice of the peace and attested by his official signature.)

SEC. 5. Such petition may be forwarded by mail, or otherwise, as said petitioners may elect, to the dean of the agricultural college at Columbia, Mo., who shall, on receipt of same, direct the veterinary surgeon to go to the locality named and give such aid and instructions as he may think best for the prevention or cure of the disease with which he shall find said live stock infected, and request said petitioners to report to him, in writing, the results of the treatment prescribed.

SEC. 6. If, upon investigation, said veterinary surgeon shall be satisfied that said live stock is infected with what is known as pleuro-pneumonia, glanders, or any other dangerous and infectious disease, against which he may think best to quarantine, he shall immediately notify the county court, or two of the county judges thereof in vacation, of the county in which said diseased stock may be found, setting forth, in writing, the number and kind of stock infected, and the character and type of the disease. Said court, or two of the judges thereof in vacation, shall thereupon issue an order, in writing, commanding the sheriff to immediately summon ten freeholders, being stock-raisers, who shall proceed at once to the locality where such diseased stock may be, and carefully examine the same, and if a majority of said freeholders shall find such stock infected, as aforesaid, they shall certify such finding, in writing, to the court or judges aforesaid, who shall thereupon issue an order, in writing, commanding the sheriff to compel the owner or other persons in whose possession such diseased stock shall be found, to immediately quarantine such diseased stock by placing the same in pens, barns, or sheds, completely separated from any other stock not so infected until such diseased stock shall die or completely recover; and the pens or sheds containing the diseased stock shall be surrounded with a good and sufficient fence to prevent any other stock from approaching nearer than 100 feet to the barn or pen containing such diseased stock.

SEC. 7. Any owner or owners, person or persons, in charge of diseased stock, as aforesaid, who shall be notified to quarantine the same, as provided by this act, and who shall violate any of the provisions thereof, shall be guilty of a misdemeanor and punished by a fine of not less than $50 nor more than $500, or by imprisonment in the county jail not less than one month nor more than one year, or by both such fine and imprisonment.

SEC. 8. The sheriff shall receive for his services under this act such compensation as is now provided by law for similar labor, and the freeholders making such examination as aforesaid shall receive such compensation as is now provided by law for jury service, which shall be allowed by the county court and paid out of the county treasury of the county in which such diseased stock shall be found.

SEC. 9. Said veterinary surgeon shall report to the dean of the agricultural college, in writing, at least once in every three months, setting forth the locality or localities visited, as provided in the preceding sections, the kind of stock treated, the type and character of the diseases, the remedies prescribed, and the results, as far as known, of such treatment; he shall also render an account for the number of miles traveled, and the actual sum of money paid out by him therefor, and, if found correct, said account shall be audited and allowed by the board of curators, as now provided by law.

SEC. 10. The dean of the agricultural college shall, from time to time, as often as may be required, select from said reports and publish in a concise form such information as he may think valuable to the people of Missouri. This information may be published in connection with reports relating to agriculture or in separate bulletins.

SEC. 11. The veterinary surgeon herein provided for shall receive a salary of $2,000

per annum, payable at such times as the board of curators may direct, and out of the funds provided for the maintenance of the agricultural college.

SEC. 12. It shall be the duty of the dean of the agricultural college to collate and compile the information derived from the reports made by said veterinary surgeon, as provided for in this act, and make a report to the general assembly within ten days of the date of the meeting thereof, such data and useful knowledge, together with such suggestions as may be beneficial to the agricultural and stock interests of the State of Missouri.

SEC. 13. The fact that there now exist in certain parts of the State dangerous and infectious diseases among domestic animals, create san emergency within the meaning of the constitution; therefore this act shall take effect and be in force from and after its passage.

Approved, March 25, 1885.

MONTANA TERRITORY.

AN ACT to prevent the spread of contagious diseases among sheep.

Be it enacted by the legislative assembly of the Territory of Montana, There shall be appointed by the governor in each county of the Territory of Montana, a qualified elector of such county, who shall be known as a sheep commissioner, who shall serve for a term of two years, or until his successor is appointed, who shall, before entering upon the duties of his office, subscribe an oath and enter into bond, with two or more sufficient sureties, to be approved by the county commissioners, conditioned for the faithful performance of the duties of his office. Each inspector shall have power to appoint deputies, not exceeding one for each precinct, for whose acts he shall be responsible, and by any of whom he may perform any act required of him by this chapter. It shall be the duty of the inspector of sheep, at any time, upon the written request of one or more citizens of his county owning or having possession of sheep, that sheep owned by or in possession of any other person is affected with scab or scabies, and that such owner or other person has been notified of the fact, and fails to take proper steps to cure such diseased sheep, it shall be the duty of the inspector, without delay, to examine such sheep, and if he shall find said sheep to be affected with said disease he shall within thirty days take said sheep in his possession and cause them to be cured. He may call to his assistance such aid as may be necessary for that purpose, and the owner or owners of said sheep shall be liable to said sheep inspector for all necessary expenses, costs, and charges incurred in curing the sheep, including the compensation of $3 per day to such inspector for every day or part of a day in which he shall be necessarily employed, together with the expenses of traveling to and from such place: *Provided*, That if the complaint shall be false the party complaining shall be liable to the sheep inspector for his compensation of $3 per day for every day or part of a day employed in the examination of said sheep and expenses of traveling, as aforesaid. The indebtedness incurred under the provisions of this chapter may be recovered by such sheep inspector in his official character by an action in any court having jurisdiction of the amount.

SEC. 2. Any person, company, or corporation intending to bring or cause to be brought into the Territory of Montana any sheep or bands of sheep, must first obtain from an inspector of scab, duly appointed under this chapter, a certificate that said sheep or bands of sheep are sound and free from scabs or scabies before crossing the boundary line of said Territory; and any person, company, or corporation desiring to move his or their sheep from one county to another, or from one section to another, shall secure from the sheep inspector of the county which he leaves, or which he enters, a certificate of inspection and traveling permits, duly signed, that such sheep are free from scab or any other infectious or contagious diseases; and any person willfully or negligently violating the provisions of this chapter shall be guilty of a misdemeanor, and on conviction thereof shall be punished by a fine of not less than $50 nor more than $500 for a band of 1,000 sheep or less so affected, and an additional fine of not less than $50 nor more than $500 for each additional 1,000 sheep or fraction thereof in such affected band.

SEC. 3. Any person or persons, now or hereafter, having ownership of or in any sheep infected by scab or any other infectious disease, shall keep the same secure from contact with other sheep, and shall not be permitted to move or drive the same upon any highway, byway, or across any range, where other sheep are liable to range or be driven: *Provided*, That the owner or owners of such sheep so infected may move the same by first obtaining a written permission of the sheep commissioner of the county wherein he wishes to move them, which permission shall state the manner in which they are to be moved, and the place to which they are to be moved, and the route designated: *Provided*, That the sheep commissioner shall not give permission to any

person or persons to move any sheep so affected across any range where healthy sheep are accustomed to range. Any person or persons violating any of the provisions of this section, shall be guilty of a misdemeanor. and upon conviction thereof, shall be fined in any sum not less than $250 nor more than $2,000.

SEC. 4. Whenever, on any examination of any sheep or herds of sheep, kept or herded in any county in the Territory of Montana, the sheep inspector shall find such sheep, or any portion of them, affected with scab or any other infectious or contagious diseases, he shall forthwith notify the owner or person in charge of such diseased sheep, in writing, to put such diseased sheep, and the sheep or herd in which they have been kept, into an inclosure, or by other sufficient means be kept from contact with other sheep, and to proceed immediately to treat them for the cure of such disease under his supervision; and any person, company, or corporation who shall refuse or neglect to immediately put such sheep into an inclosure, or by other sufficient means secure them from contact with other sheep, or shall refuse or neglect for thirty days after such notice to proceed to treat such sheep for the cure of such disease, under the supervision of an inspector, shall be guilty of a misdemeanor, and, upon conviction thereof, shall be punished by a fine of not less than $25 and not more than $200, and for each day of such neglect or refusal to treat such sheep after thirty days from such notice such person or corporation shall be guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine of not less than $20 nor more than $50, and in addition to the punishment provided in this section the inspector shall, in case of a refusal or neglect to secure such diseased sheep from contact with other sheep, immediately upon notice being given, as hereinbefore provided, or in case of refusal or neglect of fifty days after notice to treat such sheep for the cure of such disease, seize such sheep, and by inclosure or other sufficient means secure them from contact with other sheep, and proceed without other unnecessary delay to treat them for the cure of such disease, and the expense of such seizure, keeping, and treatment, together with the fees of the inspector while engaged therein, shall be charged on the sheep so seized, and the inspector shall hold the sheep until the same is paid, or if not paid within ten days after such treatment is completed he shall collect the same, together with the costs and expenses of collection, by advertising and selling such sheep, or so many thereof as may be necessary, in the manner provided by law for the sale of personal property upon execution: *Provided*, No person, company, or corporation shall be required to dip a band of sheep from the 1st day of November until the 1st day of June of each year.

SEC. 5. The per diem of the sheep inspector shall be as follows: For inspecting, granting certificates, and traveling permits, $3, together with 10 cents per mile necessarily traveled in making such inspection.

SEC. 6. Any person, company, or corporation violating any of the provisions of this chapter shall be liable, in civil action, for all damages sustained by any other person, company, or corporation in consequence of such violation.

SEC. 7. On any action or proceedings, civil or criminal, arising under this chapter, all persons having an interest in sheep, concerning which such action or proceeding is had, shall be deemed the owners of such sheep, and owners shall be liable, severally and jointly, for violation of this chapter. Any herder, shepherd, or other person in charge of sheep, who shall willfully refuse to give an inspector information as to the condition of the sheep in his charge, shall be guilty of a misdemeanor, and, upon conviction thereof, shall be punished by a fine not less than $25 nor more than $250. In criminal actions against corporations under this chapter, no arrests shall be necessary, but a summons, containing notice of the time and place of trial, together with a copy of the complaint filed before the justice of the peace or clerk of the court in which the action is commenced, shall be served in the manner and for the same time as in civil actions.

SEC. 8. Courts of justice of the peace shall have concurrent jurisdiction with the judicial courts of all misdemeanors defined in this chapter, and of all criminal proceedings for such misdemeanor. The provisions of this chapter requiring the inspectors of sheep to prosecute for violations of its provisions shall not be so construed as to prevent such prosecutions from being commenced and prosecuted by other persons as other criminal actions are commenced and prosecuted.

SEC. 9. All fines and penalties arising from the provisions of this chapter shall one-half go to the general school fund of the county in which the action is brought, and the other half go to the county fund.

SEC. 10. On and after the passage of this act Article VII of the fifth division of the general law, act of February 11, 1876, excepting section 18, shall be and is hereby repealed.

SEC. 11. The provisions of this bill shall take effect on and after its passage: *Provided*, No person, company, or corporation shall be required to dip a band of sheep, as provided by section 4, prior to August 1, 1883.

AN ACT to amend section 13 of the fifth division of the revised statutes of Montana, relating to diseased animals.

Be it enacted by the legislative assembly of the Territory of Montana, That section 13 of the fifth division of the revised statutes of Montana be amended to read as follows:

SEC. 13. It shall be unlawful for the owner or owners, or for any person or persons, having in charge any horse, mule, ass, or horned cattle, affected with any contagious disease, to allow said diseased animal or animals to run at large. All animals affected with contagious disease shall be, at once, removed by the owner or owners thereof, or the person or persons in charge of the same, to some secure inside inclosure, where contact with other animals by reaching over or through the fence of said inclosure, will be impossible; or such diseased animal or animals shall be closely herded 6 miles away from any farm, or from any other stock running at large, and shall be kept in such inclosure or herded, as is herein provided, until they shall die or are entirely cured of any contagious disease. Every person who is the owner or part owner, or has in his charge any animals affected with any contagious disease, who shall knowingly neglect or refuse to remove or so inclose or herd away from farms or stock, such animals affected with any contagious disease, as hereinbefore provided, shall be guilty of a misdemeanor, and, on conviction, shall be fined in any sum not less than $50 nor more than $100, and shall be liable for damages to any party injured by such diseased animals running at large.

Approved, March 5, 1883.

NEBRASKA.

AN ACT concerning the care of, and to prevent the spread of contagious and infectious diseases among domestic animals, to provide for the appointment of a live-stock sanitary commission and State veterinary surgeon, defining their powers and duties, and regulating their compensation.

Be it enacted by the legislature of the State of Nebraska, The governor, by and with the advice and consent of the senate, shall, immediately upon the passage of this act, appoint a competent and skilled veterinary surgeon for the State, who, at the date of such appointment, shall be a graduate in good standing of a recognized college of veterinary surgery, and who shall have had three or more years' actual practice since graduation, and who shall hold his office until his successor is appointed and qualified. The governor shall also at the regular session of the legislature in 1887, and every two years thereafter, and during a regular session of the legislature, by and with the advice and consent of the senate, appoint a competent and skilled veterinary surgeon for the State, having the qualifications above mentioned, whose term of office shall be for two years from the 1st day of April next succeeding his appointment, unless sooner removed, as hereinafter provided. The veterinary surgeon for the State shall keep his office at the capital of the State, in a room to be provided by the governor, and shall receive a salary of $2,500 per annum, payable as the salaries of State officers are paid, and actual necessary traveling expenses by him incurred and paid in the discharge of his duties, to be drawn from the treasury upon itemized accounts thereof, properly verified, rendered monthly, and approved by the governor. The governor shall have power of removal, and shall immediately fill all vacancies which may at any time occur in the office of state veterinarian or live-stock sanitary commission.

SEC. 2. Before entering upon the duties of his office, the State veterinarian shall take and subscribe an oath to faithfully discharge the duties of said office, and shall execute a bond to the State of Nebraska in the sum of $5,000, with good and sufficient sureties, conditioned for the faithful performance of the duties of his office, which bond and sureties thereto shall be approved by the governor, and said bond, together with his oath of office, shall be deposited in the office of the secretary of the State.

SEC. 3. It shall be the duty of the State veterinarian, under direction of the live-stock sanitary commission for the State, to investigate any and all cases of contagious or infectious diseases among domestic animals of the State which may come to his knowledge or be brought to the notice of the live-stock sanitary commission, and for this purpose shall visit at once any locality within the State where any such contagious or infectious disease of domestic animals may be reported to exist, and make a full and careful examination of all animals supposed to be diseased, and inquire into the nature and cause of any such disease which he may discover, prescribe the proper care, necessary remedies, and direct the sanitary measures necessary to prevent the spread thereof, and to make a full report of his findings and doings in the premises to the live-stock sanitary commission, with recommendation and suggestions as to the means necessary to be employed to prevent the spread and best calculated to exterminate any and all such contagious or infectious diseases by him found to exist among the domestic animals of the State.

SEC. 4. The State veterinarian shall make a continous scientific study and investi-

gation of all diseases of domestic animals, and the causes, preventatives, and the cures thereof, and report the result of his study and investigation to the governor, giving in plain ordinary language the symptoms by which any such disease may be identified, how liable to be introduced and spread, the causes and conditions to which may be attributed the production of any such disease, and the sanitary and other measures best calculated to prevent the germination and spread of any such contagious or infectious disease among live stock, together with the best known treatment and remedies, also the treatment necessary in case of injury to domestic animals in time for publication in the several reports required by law, and perform such other service and duties as may be required by law or directed by the governor or the live-stock sanitary commission in the interest of the State.

SEC. 5. The governor, by and with the advice and consent of the senate, shall immediately upon the passage of this act, appoint three commissioners, each of whom shall be engaged in the business of stock-grazing, who shall constitute the live stock sanitary commission of the State of Nebraska. Before entering upon the duties of his office, each commissioner shall take and subscribe the oath of office, and file the same with the secretary of the State, and each commissioner, before entering upon the performance of his duties, shall execute a bond to be approved by the governor in the sum of $2,000, conditioned that he will faithfully perform the duties of his office, and file the same with the secretary of state. The governor shall also at the regular session of the legislature in 1877, and every two years thereafter, and during a regular session of the legislature, by and with the advice and consent of the senate, appoint three commissioners, who shall have the qualifications above mentioned, and whose term of office shall be for the period of two years from the first day of April next succeeding their appointment, unless sooner removed, as hereinbefore provided. Said commissioners shall elect one of their number chairman, and the State veterinarian shall be *ex officio* secretary of said commission. The secretary shall keep a full record of the proceedings of the commission, and make such report to the governor as may from time to time be required, who may transmit the same to the secretary of the State board of agriculture for publication.

SEC. 6. It shall be the duty of the commission provided for in the fifth section of this act, to protect the health of the domestic animals of the State from all contagious or infectious diseases of a malignant character, and for this purpose it is hereby authorized and empowered to establish, maintain, and enforce such quarantine, sanitary, and other regulations as it may deem necessary. It shall be the duty of any member of said commission, upon receipt by him of reliable information of the existence among the domestic animals of the State of any malignant disease, to at once notify the State veterinarian, who shall go at once to the place where any such disease is alleged to exist, and make a careful examination of the animals believed to be affected with any such disease, and ascertain, if possible, what, if any, disease exists among the live stock reported to be affected, and whether the same is contagious or infectious or not; and if said disease is found to be of a malignant, contagious, or infectious character he shall direct the temporary quarantine and sanitary regulations necessary to prevent the spread of any such disease, and report his findings and actions to the commission.

SEC. 7. Upon the receipt by any member of the commission of the report of the State veterinarian, provided for in section 6 of this act, if said member shall be of the opinion that the exigencies of the case require, he shall immediately convene the commission at such place as he may designate, and if, upon consideration of the report of the veterinarian the commission shall be satisfied that any contagious or infectious disease exists of a malignant character, which seriously threatens the health of domestic animals, they shall proceed at once to the infected district, ascertain and determine the premises or grounds infected, and establish the quarantine, sanitary, and police regulations necessary to circumscribe and exterminate such disease; also to list and describe the domestic animals affected with such disease, and those which have been exposed thereto, and included within the infected district or premises defined and quarantined, with such reasonable certainty as would lead to their identification, and for that purpose the said commission may, in its discretion, cause the live stock so included within the quarantine lines established to be marked or branded in such manner as the commissioners may designate; and no domestic animal liable to become infected with the disease or capable of communicating the same, shall be permitted to enter or leave the district, premises, or grounds so quarantined, except by authority of the commission. The said commission shall also from time to time give and enforce such directions, and prescribe such rules and regulations, as to separating, mode of handling, treating, feeding, and caring for such diseased and exposed animals, as it shall deem necessary to prevent the two classes of animals from coming in contact with each other, and perfectly isolate them from any other domestic animals, which have not been exposed thereto, and which are susceptible of becoming infected with the disease. And the said commission, or any of the members thereof, and said veterinarians are hereby authorized and empowered to enter upon any grounds or premises to carry out the provisions of this act.

SEC. 8. When in the judgment of the commission it shall be necessary to prevent the further spread of any contagious or infectious disease among the live stock of the State to destroy animals affected with, or which have been exposed to any such disease, it shall determine what animal shall be killed, and appraise the same as hereinafter provided, and cause the same to be killed and the carcasses disposed of as in its judgment will best protect the health of the domestic animals of the locality.

SEC. 9. Whenever, as in the eighth section of this act provided, the commission shall direct the killing of any domestic animal or animals, it shall be the duty of the commissioners to appraise the animals to be killed, and shall make an inventory of the animal or animals condemned, and in fixing the value thereof the commissioners shall be governed by the value of said animal or animals at the date of appraisement: *Provided*, That no animal or animals shall be appraised except those affected with contagious or infectious disease of a malignant character, or such as have been exposed thereto.

SEC. 10. When the commission shall have determined the quarantine and other regulations necessary to prevent the spread among domestic animals of any malignant, contagious, or infectious disease found to exist among the live stock of the State, and given its order as hereinbefore provided, prescribing quarantine and other regulations, it shall notify the governor thereof, who shall issue his proclamation proclaiming the boundary of such quarantine, and the orders, rules, and regulations prescribed by the commission, which proclamation may be published by written or printed handbills posted within the boundaries or on the lines of the district, premises, places, or grounds quarantined: *Provided*, That if the commission decide that it is not necessary by reason of the limited extent of the district in which such disease exists that a proclamation should be issued, then none shall be issued; but the commission shall give such notice as may to it seem best to make the quarantine established by it effective.

SEC. 11. The commission provided for in this act shall have power to employ, at the expense of the State, such persons and purchase such supplies and material as may be necessary to carry into effect all orders by it given, as hereinbefore provided: *Provided*, That no labor shall be employed nor material or supplies purchased by the commission except such labor, material, and supplies as may be necessary to carry into effect the quarantine and other regulations prescribed by the commission.

SEC. 12. It shall be the duty of the railway corporations doing business in this State to cleanse and disinfect the cars used by them in transporting stock in this State, at such times and places as the commission may designate, whenever, in the opinion of the commission, any such order may be necessary to prevent the spread of infectious or contagious diseases. Any such corporation violating any of the provisions of this section shall be liable to a penalty of $500 for each offense, to be recovered in a civil action, to be prosecuted under the direction of the attorney-general, in the name of the State of Nebraska.

SEC. 13. When any animal or animals are killed under the provisions of this act by order of the commission, the owner thereof shall be paid therefor the appraised value as fixed by the appraisement hereinbefore provided for: *Provided*, The right of indemnity on account of animals killed by order of the commission, under the provisions of this act, shall not extend to the owner of animals which have been brought into the State in a diseased condition, or from a State, country, Territory, or district in which the disease with which the animal is infected, or to which it has been exposed, exists. Nor shall any animal be paid for by the State which may be brought into the State in violation of any law or quarantine regulation thereof, or the owner of which shall have violated any of the provisions of this act, or disregarded any rule, regulation, or order of the live-stock sanitary commission or any member thereof. Nor shall any animal be paid for by the State which came into the possession of the claimant with the claimant's knowledge that such animal was diseased, or was suspected of being diseased, or of having been exposed to any contagious or infectious disease. Nor shall any animal belonging to the United States be paid for by the State.

SEC. 14. It shall be the duty of any owner or person in charge of any domestic animal or animals who discovers, suspects, or has reason to believe that any of his domestic animals, or domestic animals in his charge, are affected with any contagious or infectious disease, to immediately report such facts, belief, or suspicion to the commission, or any member thereof, and to the sheriff, and county clerk of the county in which such domestic animal is found; and it shall be the duty of any person who discovers the existence of any contagious or infectious disease among the domestic animals of another, to report the same at once to the sheriff and county clerk of the county in which such domestic animal is found.

SEC. 15. The sheriff to whom the existence of any infectious or contagious disease of domestic animals is reported, shall forthwith proceed to the place where such domestic animal is, and examine the same, and forthwith report the result of such examination to the commission, or any member thereof, and shall prescribe such tempo-

rary quarantine regulation as will prevent the spread of the contagious or infection until the live-stock sanitary commission can provide and order suitable quarantine rules and regulations.

SEC. 16. Any person who shall knowingly bring into this State any domestic animal which is affected with any contagious or infectious disease, or any animal which has been exposed to any contagious or infectious disease, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined in any sum not less than five hundred nor more than five thousand dollars.

SEC. 17. Any person who owns, or is in possession of, live stock which is, or which is suspected or reported to be, affected with any infectious or contagious disease, who shall refuse to allow the State veterinarian, or other authorized officer or officers, to examine such stock, or shall hinder or obstruct the State veterinarian, or other authorized officer or officers, in any examination of, or in an attempt to examine such stock shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined, in any sum not less than one hundred dollars nor more than five hundred dollars.

SEC. 18. Any person who shall have in his possession any domestic animal affected with any contagious or infectious disease, knowing such animal to be so affected, or after having received notice that such animal is so affected, who shall permit such animal to run at large, or who shall keep such animal where other domestic animals not affected by or previously exposed to such disease may be exposed to its contagion or infection, or who shall sell, ship, drive, trade, or give away such diseased animal or animals which have been exposed to such infection or contagion, or who shall move or drive any domestic animal in violation of any direction, rule, regulation, or order establishing and regulating quarantine, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined in any sum not less that $100 nor more than $500 for each of such diseased or exposed domestic animals which he shall permit to run at large, or keep, or sell, ship, drive, trade, or give away in violation of the provisions of this act: *Provided*, That any owner of any domestic animal which has been affected with or exposed to any contagious or infectious disease, may dispose of the same, after having obtained from the State veterinarian a bill of health for such animal.

SEC. 19. When any live stock shall be appraised and killed by order of the commission it shall issue to the owner of the live stock so killed a certificate, showing the number and kind, and general description of animals killed, and the amount to which the holder is entitled, and report the same to the auditor of State; and upon presentation of such certificate to the auditor, he shall draw his warrant on the treasurer for the amount therein stated, payable out of any money appropriated for the live-stock indemnity fund.

SEC. 20. The members of the commission, appointed by the governor, as hereinbefore provided, shall receive $5 per day for the time by them necessarily employed in the discharge of the duties required by this act. And each member of the commission hereinbefore provided for shall receive the actual necessary traveling expenses by him incurred and paid in the discharge of the duties required of him by the provisions of this act, which said per diem and expenses shall be drawn from the treasury out of the live-stock indemnity fund on the warrant of the auditor, to be issued on the filing in his office of an itemized account thereof, properly verified.

SEC. 21. Whenever the governor of the State shall have good reason to believe that any dangerous, contagious, or infectious disease has become epizootic in certain localities in other States, Territories, or countries, or that there are conditions which render such domestic animals from such infected districts liable to convey such disease, he shall, by proclamation, prohibit the importation of any live stock of the kind diseased into the State unless accompanied by a certificate of health given by a duly authorized veterinarian; and all such animals arriving in this State shall be examined without delay by the State veterinary surgeon, and, if deemed necessary, placed in close quarantine until all danger of infection is passed, when they shall be relieved by the order of the veterinary surgeon or the live-stock commission.

SEC. 22. That the owners of any public stock-yard-doing business in this State, when requested by the live-stock sanitary commission shall appoint and keep constantly in their employ at their expense, a competent inspector of live stock, whose duty it shall be to daily inspect with care all animals brought into the stock-yards, in whose employ any such inspector may be; and upon the discovery, by such inspector, in such yards, of any animal affected with any malignant, contagious, or infectious disease, he shall direct the manner in which any such diseased animal shall be disposed of, so as to prevent the spread of any such contagious or infectious disease, and for this purpose may cause any such diseased animals to be killed, and the carcasses to be disposed of at the expense of the owner thereof, in such manner as will prevent the spread of any such disease; but in no event shall any such diseased stock be permitted to be driven or shipped out of any such stock-yards, except to some rendering establishment or other suitable place for killing and disposing of such diseased animal, as hereinbefore provided for, and then under such regulations

and restrictions as may be necessary to prevent the spread of the disease on account of which any such animals have been condemned: *Provided*, That the owner of any animal or animals ordered to be destroyed by any inspector shall have the right to appeal from any decision of such inspector to the State veterinarian or the State live-stock sanitary commission; and during the pendency of such appeal the condemned animals shall be kept in strict quarantine at the expense of the owner thereof, unless the State veterinarian shall decide such stock is not so diseased, then said expenses shall be paid by the owner of such stock-yards: *And provided further*, That no compensation shall be made by the State to owners of diseased live stock found in the public stock-yard and destroyed as herein provided. The inspector of live stock in any public stock-yards in this State shall, on demand of the owner of any live stock passing through any such stock yards, furnish to said owner a bill of health for any live stock by him inspected as hereinbefore required, and found to be healthy.

SEC. 23. The commissioners shall have the power to call upon any sheriff, under sheriff, deputy sheriff, or constable, to execute their orders, and such officers shall obey the orders of said commissioners, and the officers performing such duties as provided for by this act shall receive compensation therefor as is prescribed by law for like services, to be paid as other expenses of said commission, as hereinbefore provided; and any officer may arrest on view and take before any magistrate of the county, any person found violating the provisions of this act, and such officers shall immediately notify the county or district attorney of such arrest, and he shall prosecute the person so offending according to law.

SEC. 24. Except as otherwise provided in this act, any person who shall violate, disregard, or evade, or attempt to violate, disregard, or evade any of the rules, regulations, orders, or directions of the live-stock sanitary commission establishing and governing quarantine shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined in any sum not less than $100 nor more than $5,000.

SEC. 25. There shall be levied and assessed upon the assessed value of all taxable property in the State in each year one-tenth of one mill on each and every dollar thereof, to be known as the live-stock indemnity fund tax, said tax to be assessed and collected in the same manner and at the same time as is now or may be prescribed by law for the assessment and collection of State revenue.

SEC. 26. It shall be the duty of the county treasurers of the several counties to preserve the fund thus provided for as a separate fund, and to transmit the same twice a year to the State treasurer, who shall keep the same in a fund to be known as the live-stock indemnity fund.

SEC. 27. For the purposes of this act each member of the live-stock sanitary commission is hereby authorized and empowered to administer oaths and affirmations.

SEC. 28. The live-stock sanitary commission shall have power to create and enforce quarantine against the disease known as Texas, splenic, or Spanish fever, in any of the counties of this State. In so doing it shall have the power, and, as far as possible, follow the terms of law and requirements of the law creating the commission.

SEC. 29. That the live-stock sanitary commission be authorized and directed to cooperate with the Commissioner of Agriculture of the United States, or any officer or authority of the General Government in the suppression and extirpation of any and all contagious diseases among domestic animals, and in the enforcement and execution of any and all acts of Congress to prevent the importation or exportation of diseased cattle and the spread of infectious or contagious diseases among domestic animals.

SEC. 30. The liability of the State for carrying out the provisions of this act in any two years is limited by, and shall in no case exceed, the amount especially appropriated for that purpose and that period.

SEC. 31. All acts and parts of acts inconsistent with this act are hereby repealed.

Approved, March 5, A. D., 1885.

AN ACT to prevent the spread of hog cholera and other kindred diseases, and prevent traffic in animals dying from infectious or other diseases.

Be it enacted by the legislature of the State of Nebraska, That it shall be the duty of the owners of swine or other domestic animals dying from cholera or other diseases, within twenty-four hours after their death, to cause the carcasses of such animals to be suitably buried or burned up, on the premises owned or occupied by such person.

SEC. 2. If the owner of any swine or other domestic animals dying from cholera or other disease, or any other person shall sell or dispose of the carcass of such swine or other domestic animals, to any person for the purpose of manufacturing the same into soap or rendering the same into lard, or for other purposes, or if any person shall buy, or otherwise obtain the carcass of any swine or other domestic animals, dying from cholera or other disease for manufacturing purposes as aforesaid, or any other purpose except that of burial or burning, as provided in the preceding section, every such per-

sons shall upon conviction be fined in any sum not less than $25 nor more than $100, or be imprisoned not exceeding six months.

SEC. 3. Whereas an emergency exists, this act shall be in force and take effect from and after its passage.

Approved, March 4, A. D., 1885.

NEW HAMPSHIRE.

The act establishing the board of agriculture contains this clause:

In the absence of other statute provisions, the board shall act as commissioners on the diseases of domestic animals.

No authority was given, the board acting according to its own judgment.

Chapter 116 of the general laws is as follows:

SECTION 1. Whenever any dangerous or troublesome disease prevails among cattle, horses, or other domestic animals, the governor, with advice of the council, may appoint a board of commissioners, of not more than five persons, and may terminate its existence when the public safety may permit; or the governor may direct that the board of agriculture may perform the duties and possess the powers herein specified. The compensation of such board shall be limited to actual expenses, to be allowed by the governor and council.

SEC. 2. Said board shall have the power to make regulations prohibiting the introduction or transportation of any domestic animals, by railroad or otherwise, and such other regulations as they may deem necessary to arrest or exclude any such infectious or troublesome disease, and modify or annul the same, as circumstances may require. Such regulations shall be in force until the existence and power of the board shall be terminated by the governor.

SEC. 3. Any person or corporation that shall violate any of the regulations of said board shall be punished for such offense by a fine not exceeding $100.

SEC. 4. Any person or corporation that shall bring into the State, between the 20th day of May and the 20th day of October, any Texas or Cherokee cattle that have not been kept north of the Ohio or Missouri River during the winter immediately preceding, shall be punished for such offense by a fine not exceeding $25 for each and every animal so brought into the State. The term "Texas or Cherokee cattle" shall be construed to mean the native cattle of Texas and Louisiana, and the classes of cattle known under these names.

SEC. 5. Selectmen shall enforce the provisions of this chapter within their respective towns at the expense of such towns.

Chapter 30, laws of 1879, relate to the exposure of diseased animals and is as follows:

Be it enacted by the senate and house of representatives in general court convened, Any person who shall expose or suffer to be exposed in any highway, public place, or pasture any horse affected by the disease known as glanders, shall be liable to the penalty of a fine not exceeding $50 for each offense, for the benefit of the town or city where such offense is committed.

SEC. 2. Any person exposing any domestic animal, as aforesaid, affected by any contagious or troublesome disease, shall be liable to a fine not exceeding $25 for each offense, for the benefit of the town.

SEC. 3. The marshals of cities, the selectmen or police officers of towns where such offenses are committed, on proper and satisfactory evidence, shall cause the parties so offending to be prosecuted.

SEC. 4. This act shall take effect on its passage.

Approved, July 18, 1879.

NEW JERSEY.

Revision of laws—1709–1877.

AN ACT to prevent the spread of glanders in horses, approved March 31, 1864.

56. SECTION 1. Hereafter, if complaint be made to any justice of the peace of this State, verified by the oath or affirmation of the complainant, that any person or persons, body politic or corporate, have in his, her, or their possession any horses, mares, geldings, asses, or mules, having in or upon them the disease known by the name of

glanders, to order an inquiry and examination to be made of the condition of such horses, mares, geldings, mules, or asses, under the supervision of some competent and skillful veterinary surgeon; and if by the report of the said surgeon it shall be made to appear to the satisfaction of the said justice that such horse or horses, mare or mares, gelding or geldings, mule or mules, ass or asses, as is or are mentioned in the said complaint, is or are diseased with glanders, by his warrant, directed to the owner or owners, or person or persons having the same in possession, forthwith to destroy such horse or horses, mare or mares, gelding or geldings, mule or mules, ass or asses.

57. SEC. 2. Any person or persons who shall sell, expose for sale, or keep in his or their possession, or keep, or suffer to be kept on his or their premises, or lead, drive, or bring into any street, road, or public place, any horse or horses, mare or mares, gelding or geldings, mule or mules, ass or asses, afflicted with glanders, knowing such horse or horses, mare or mares, gelding or geldings, mule or mules, ass or asses, to be so afflicted, shall be deemed guilty of a misdemeanor, and on condition thereof shall be punished by a fine of not less than $100, and not exceeding $500, or by imprisonment in the State prison not less than one month and not exceeding one year, or both, at the discretion of the court.

1. *Be it enacted by the senate and general assembly of the State of New Jersey*, That whenever it shall be brought to the notice of the governor of this State that the disease known as contagious or infectious pleuro-pneumonia exists among the cattle in any of the counties of this State, it shall be his duty to take measures to promptly suppress the disease and prevent it from spreading.

2. *And be it enacted*, That for such purpose the governor shall have power and he is hereby authorized to issue his proclamation stating that the said infectious or contagious disease exists in any county or counties of the State, and warning all persons to seclude all animals in their possession that are affected with such disease, or have been exposed to the infection or contagion thereof, and ordering all persons to take such precautions against the spreading of such disease as the nature thereof may, in his judgment, render necessary or expedient; to order that any premises, farm or farms where such disease exists or has existed be put in quarantine so that no domestic animal be removed from or brought to the premises or places so quarantined, and to prescribe such regulations as he may judge necessary or expedient, to prevent infection or contagion being communicated in any way from the places so quarantined; to call upon all sheriffs and deputy sheriffs to carry out and enforce the provisions of such proclamations, orders, and regulations; and it shall be the duty of all sheriffs and deputy sheriffs to obey and observe all orders and instructions which they may receive from the governor in the premises; to employ such and so many medical and veterinary practitioners, and such other persons as he may from time to time deem necessary to assist him in performing his duty, as set forth in the first section of this act, and to fix the compensation; to order all or any animals coming into the State to be detained at any place or places for the purpose of inspection and examination; to prescribe regulations for the destruction of animals affected with the said infectious or contagious disease, and for the proper disposition of their hides and carcasses, and of all objects which might convey infection or contagion; provided that no animal shall be destroyed, unless first examined by a medical or veterinary practitioner in the employ of the governor as aforesaid; to prescribe regulations for the disinfection of all premises, buildings, and railway cars, and of all objects from or by which infection or contagion may take place or be conveyed; to alter and modify from time to time, as he may deem expedient, the terms of all such proclamations, orders, and regulations, and to cancel or withdraw the same at any time.

3. *And be it enacted*, That any person who shall transgress the terms or requirements of any proclamation, order, or regulation issued or prescribed by the governor under the authority of this act, shall be deemed guilty of a misdemeanor.

4. *And be it enacted*, That all the expense incurred, under direction or by authority of the governor in carrying out the provisions of this act shall be paid by the treasurer upon the warrant of the comptroller on being certified as correct by the governor.

5. *And be it enacted*, That this act shall take effect immediately.

Approved, March 13, 1879.

Supplement to an act entitled an "Act to establish a State board of health," approved March 9, 1877.

1. *Be it enacted by the senate and general assembly of the State of New Jersey*, That in addition to the powers conferred by the act to which this is a supplement, said board shall have full power and authority to examine and determine whether pleuro-pneumonia, rinderpest, or any other contagious or infectious disease exists among animals in any county in this State; and that the sum of $500 is hereby appropriated to defray the actual necessary expenses of said board while making such examinations.

2. *And be it enacted*, That in event of any contagious or infectious diseases, as aforesaid, breaking out or being suspected to exist in any locality in this State, it shall be the

duty of all persons owning or having any interest whatever in said cattle immediately to notify the said board of health, or any one of them, of the existence of such disease, and thereupon it shall be the duty of said board of health or any member thereof to immediately proceed to the place or places where said disease is reported to exist, and to quarantine said animal or animals, and take such precautionary measures as shall be deemed necessary; to prescribe such remedies as in their judgment will be conducive to the recovery of such animal or animals, and to enforce such regulations as may be adopted by said board of health.

3. *And be it enacted,* That the board of health aforesaid, and all such assistants as they may appoint, whenever in their judgment or discretion it shall appear in any case that the disease is not likely to yield to any remedial treatment, or whenever it shall seem that the cost or worth of any such remedial treatment shall be greater than the value of any animal or animals so affected, or whenever in any case such disease shall threaten its spread to other animals, to cause the same to be immediately slaughtered, and their remains to be buried not less than four feet under ground, and all places in which said animals shall have been kept, to be cleansed and disinfected.

4. *And be it enacted,* That in all cases where animals afflicted with, or which shall have been exposed to the contagion, shall have been slaughtered or killed by order of the said board of health, or their assistants, it shall be the duty of said board to appoint three competent and disinterested freeholders to appraise the value of the animals so killed or slaughtered, at the time they were so killed, who shall be affirmed or sworn before proceeding to act to make a just and true valuation of said animals so killed, at the time of their slaughter, two-thirds of which said valuation or appraisement shall be paid to the owner or owners by the State.

5. *And be it enacted,* That any person or persons refusing or neglecting to notify said board of health, or any of them, of the existence of pleuro-pneumonia, rinderpest, or any other contagious or infectious disease among cattle, shall be deemed and adjudged guilty of a misdemeanor, and, upon conviction, shall be punished by a fine of not more than $200, or by imprisonment not exceeding one year, or both, at the discretion of the court.

6. *And be it enacted,* That all bills for money expended under this act shall be audited by the comptroller of this State and then submitted to the governor for his approval, and after being thus audited and approved by the governor, shall be paid by the State treasurer upon warrant of the comptroller.

7. *And be it enacted,* That said board shall keep a full record of their proceedings, and shall publish the same in their annual report of the State board of agriculture yearly, and every year during the existence of this law.

8. *And be it enacted,* That if any person or persons shall knowingly either buy or sell, or cause to be bought or sold, any animal or animals affected with pleuro-pneumonia, rinderpest, or any other contagious or infectious disease, all such person or persons shall be deemed and adjudged guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine not exceeding $200, or imprisonment not exceeding one year, or both, at the discretion of the court.

9. *And be it enacted,* That in case an emergency shall arise and a larger sum shall be deemed necessary than the amount appropriated by the preceding section of this act, said State board of health shall present the facts in evidence to the president of the State agricultural society, and the president and executive committee of the State board of agriculture, who shall authorize such additional expenditure as in their judgment they may deem the exigency of the occasion to demand: *Provided,* That in no case shall the amount of money thus authorized to be expended exceed the sum of $5,000 in one year.

10. *And be it enacted,* That all acts or parts of acts inconsistent with this act be, and the same are hereby, repealed, and that this act shall take effect immediately.

Approved, March 12, 1880.

CHAPTER XLIX.—A supplement to an act entitled "An act to prevent the spread of glanders in horses," approved March 31, 1864.

1. *Be it enacted by the senate and general assembly of the State of New Jersey,* That in the event of the disease called by the name of "glanders," being known or suspected to exist in any locality of this State, it shall be the duty of all persons owning or having any interest in or having in their possession or under their control any horse or horses, mare or mares, gelding or geldings, ass or asses, mule or mules, having in or upon them, or being suspected to have in or upon them such disease, forthwith to notify the local board of health or any member thereof that such disease exists, or is suspected to exist, and thereupon it shall be the duty of the said board of health to notify the State board of health, or some one designated by them, to investigate the same and quarantine said animal or animals, and the premises where they are kept, and take such other precautionary measures as to any animal or animals sick or as to other animals that have been or are in proximity thereto, as shall be deemed necessary, and to enforce such regulations as are provided for in the law to which this is

a supplement, or such additional regulations as in the judgment of said State board of health the exigencies of the case may seem to require, or if said board, or any member thereof, without notification shall have any reason to believe that the said disease exists in or among any animals in this State, it shall have the same power of inquiry and examination and the same rights of jurisdiction as are herein provided where there has been notification by the owner or person having interest in or possession or control of such animals.

2. *And be it enacted*, That the said State board of health may call upon local boards of health to discover cases of the disease known by the name of "glanders," and to aid in provisions for their abatement.

3. *And be it enacted*, That for the purpose of quarantining animals the said State board of health or its representatives may take and retain in their control property, real and personal, of the owner or person having interest in or possession or control of such sick animal or animals to the extent and for the time necessary, in the judgment of said State board of health or its said representatives, to prevent the spread of such disease.

4. *And be it enacted*, That the said State board of health, or any member thereof, whenever satisfied that any horse or horses, mare or mares, gelding or geldings, ass or asses, mule or mules, is or are diseased with glanders, shall cause the same to be immediately destroyed, and all places in which said animal or animals have been kept to be cleansed and disinfected and kept under quarantine until considered safe.

5. *And be it enacted*, That any person or persons refusing or neglecting to notify said board of health, or a member thereof, of the existence or suspected existence of the said disease known by the name of "glanders" among any of the animals aforesaid, shall be deemed and adjudged guilty of a misdemeanor, and, upon conviction thereof, shall be punished by a fine of not more than $500, or by imprisonment not exceeding one year, or both, at the discretion of the court.

6. *And be it enacted*, That the governor, the secretary of state, and the comptroller shall determine the amount to be allowed to said board, or any member thereof, for services in oversight and execution of all things in and by this act required to be done.

7. *And be it enacted*, That this act shall take effect immediately.

Passed March 12, 1884.

CHAPTER CLIV.—A further supplement to an act entitled "A supplement to an act entitled 'An act to establish a State board of health,'" approved March 9, 1877, which supplement was approved March 12, 1880.

1. *Be it enacted by the senate and general assembly of the State of New Jersey*, That section 2 of the act to which this is a supplement be amended so as to read:

"2. *And be it enacted*, That in the event of any contiguous or infectious disease, as aforesaid, breaking out or being suspected to exist in any locality in this State it shall be the duty of all persons owning or having any interest in said animals, or any person called as a veterinarian to see such animals, to notify the said board of health, or any one of them, of the existence of such a disease, and thereupon it shall be the duty of the said board of health, or some one designated by them, to investigate the same, and quarantine said animal or animals, and take such precautionary measures as to any animal sick or as to other animals that have been, or are in proximity thereto, as shall be deemed necessary, and to enforce such regulations as may be adopted by such board of health; or, if said board, without notification, has any reason to believe that any such infectious or contagious disease exists in or among any animals in this State, it shall have the same power of inquiry and examination, and the same rights of jurisdiction as are herein provided, where there has been notification by the owner or those having possession thereof."

2. *And be it enacted*, That in all cases where animals affected with or which shall have been exposed to a contagious or infectious disease are ordered to be killed, or shall have been killed by order of the board of health or its assistants, it shall be the duty of three members, who are freeholders, of such a board of health, of the city, township, or county, in which the disease exists, as the State board of health may request, to appraise the value of the animal or animals so killed or ordered to be killed, taking into consideration the marketable value just previous to the time of attack of such disease; and the animal or animals so killed shall be buried by the owner thereof in the manner specified in the act to which this is a supplement: *Provided*, That in no case shall said valuation exceed the sum of $40 for any one animal; or in the case of registered cattle shall not exceed $100, one-half of said valuation to be paid by the State to the owner or owners, on presentation of such appraisement, signed by the appraiser, as provided for in the act to which this is a supplement.

3. *And be it enacted*, That when any herd or portion thereof has been or is so exposed to any contagious or infectious disease, and the State board of health deem the disease likely to spread to that portion of the herd still unaffected, although isolated or quarantined, said herd may, with the consent of the owner or owners, and with restrictions agreed upon between them and the executive officer of the State board of

health, cause or allow said herd or herds to be inoculated for the prevention of such diseases as can be thus mitigated; but any loss resulting from such inoculation shall not constitute any claim against the State or the board of health acting as its agent: *Provided*, That inoculation for pleuro-pneumonia shall in no case be allowed without the consent and approval of the State board of health and by its direction, under the penalties provided in section 8 of the act to which this is a supplement.

4. *And be it enacted*, That when any city, township, or district shall be threatened with any contagious or infectious disease among animals to such an extent as to seem to require more general precautions, the State board of health shall notify the local board of health, and with the advice and consent of the majority of said local board of health, may, for a time, prohibit the bringing of any cattle into such township without inspection or a written permit, or may make distinction between fat and store cattle, or may prohibit the running at large of animals in the township, if not already prohibited by law, for such time as the township board of health shall advise.

5. *And be it enacted*, That the State board of health, in itself or by its authorized agents, is hereby empowered to inspect any animal or animals in this State suspected of any contagious or infectious disease, whether belonging to citizens of this State or some other State or country, or when passing over ferries, or by other means of conveyance to or from this State, or to detain or send back the same, or dispose of by slaughter, as provided in the foregoing sections of this act and the act to which this is a supplement; and in case there is evidence of any contagious or infectious disease of animals being conveyed from other States to this State, the State board of health may order and direct as to the places, days, or time when animals may have egress or ingress from and to this State, and regulate the same, and with only such interference with traffic as the necessities of the case may demand.

Approved, March 23, 1881.

CHAPTER C.—A supplement to an act entitled "An act to establish a State board of health," approved March 9, 1877, which supplement was approved March 12, 1880, and also a supplement to the further supplement to said act, approved March 23, 1881.

1. *Be it enacted by the senate and general assembly of the State of New Jersey*, That when any animal is killed or ordered to be killed by the State board of health or its agents on account of its having a contagious disease, or having been exposed thereto, any three freeholders resident in this State may appraise the same, and certify to said appraisement by their signatures in presence of a witness.

2. *And be it enacted*, That if any person shall knowingly buy or sell any animal that is in a herd held in quarantine, or that has been exposed to a contagious disease, he shall be subject to the penalties contained in section 8 of the supplement approved March 12, 1880, and that the State board of health may call upon local boards of health to discover cases of contagious disease, or to aid in provisions for their abatement.

3. *And be it enacted*, That $1,000 is hereby made the annual appropriation to defray the expenses incurred by the State board of health in the execution of the several acts relating to the contagious diseases of animals, the same to be audited and approved as provided for in section 6 of the supplement to the act to which this is a supplement, which supplement was approved March 12, 1880.

4. *And be it enacted*, That if on account of the prevalence of any contagious diseases of animals, or the necessary guarding against the same, any greater expenditure shall seem to be required, the State board of health shall state the facts in evidence to the governor, the secretary of state, and the comptroller, who shall authorize such additional amount as they may think to be required, the expenditure of the same to be accounted for as in the manner heretofore provided, but in no case shall the yearly amount thus authorized to be expended exceed $5,000.

5. *And be it enacted*, That the governor, the secretary of state, and the comptroller shall determine the yearly amount to be allowed to said board or any member thereof for services in the oversight and execution of the several acts relating to the contagious diseases of animals.

6. *And be it enacted*, That all parts of acts inconsistent with this act be, and the same are hereby, repealed.

Approved, March 17, 1882.

NEW YORK.

CHAPTER 134.—AN ACT in relation to infectious and contagious diseases of animals. (Passed April 15, 1878; three-fifths being present.)

The people of the State of New York, being represented in senate and assembly, do enact as follows:

SECTION 1. Whenever any infectious or contagious disease affecting domestic animals shall be brought into or shall break out in this State it shall be the duty of the governor to take measures to suppress the same promptly and to prevent the same from spreading.

SEC. 2. For such purpose the governor shall have power:

To issue his proclamation stating that infectious or contagious disease exists in any county or counties in the State, and warning all persons to seclude all animals in their possession that are affected with such disease or have been exposed to the infection or contagion thereof, and ordering all such persons to take such precautions against the spreading of such disease as the nature thereof may in his judgment render necessary or expedient.

To order that any premises, farm or farms where such disease exists or has existed be put in quarantine, so that no domestic animal be removed from or brought to the premises or places so quarantined, and to prescribe such regulations as he may judge necessary or expedient to prevent contagion being communicated in any way from the places so quarantined.

To call upon all sheriffs and deputy sheriffs to carry out and enforce the provisions of such proclamations, orders, and regulations, and it shall be the duty of all sheriffs and deputy sheriffs to obey and observe all orders and instructions which they may receive from the governor in the premises.

To employ such and so many medical and veterinary practitioners and such other persons as he may from time to time deem necessary to assist him in performing his duty as set forth in the first section of this act and to fix their compensation.

To order all or any animals coming into this State to be detained at any place or places for the purpose of inspection and examination.

To prescribe regulations for the destruction of animals affected with infectious or contagious disease, or for the proper disposition of their hides and carcasses and of all objects which might convey infection or contagion: *Provided*, That no animal shall be destroyed unless first examined by a medical or veterinary practitioner in the employ of the governor aforesaid.

To prescribe regulations for the disinfection of all premises, buildings, and railway cars, and of all objects from which or by which infection or contagion may take place or be conveyed.

To alter and modify from time to time, as he may deem expedient, the terms of all such proclamations, orders, and regulations, and to cancel or withdraw the same at any time.

SEC. 3. Any person transgressing the terms of any proclamation, order, or regulation issued or prescribed by the governor under authority of this act, shall be guilty of a misdemeanor.

SEC. 4. All expenses incurred by the governor in carrying out the provisions of this act, and in performing the duty hereby devolved upon him, shall be audited by the comptroller as extraordinary expenses of the executive department, and shall be paid out of any moneys in the treasury not otherwise appropriated.

CHAPTER 306.—AN ACT in relation to infectious and contagious diseases of animals. (Passed May 17, 1879, by a two-thirds vote.)

The people of the State of New York, represented in senate and assembly, do enact as follows:

SECTION 1. Whenever in his judgment for the more speedy and economical suppression, or for preventing the spread of any infectious or contagious disease of domestic animals, the public welfare shall be promoted thereby, the governor shall have in addition to the powers conferred upon him by chapter one hundred and thirty-four of the laws of eighteen hundred and seventy-eight, the power to cause to be slaughtered and to be disposed of afterwards as in his judgment may be expedient, any animal or animals which by contact or cohabitation with diseased animals, or by other exposure to infections or contagion may be considered or suspected to be liable to contract or to communicate the disease sought to be suppressed, or to be prevented from spreading.

SEC. 2. Whenever any animal shall be slaughtered under any order of the governor for the purpose of suppressing or of preventing the spread of any infectious or contagious disease, the compensation to be made by the State to the owner shall be computed upon the basis of allowing for any diseased animal the actual value, if any, at the time of slaughter; for any animal that has been kept in the same stable, pen, field, pasture, or yard, with a diseased animal, two-thirds of the sound value; and in the case of any other animal so slaughtered, the full value at the time of slaughter, without regard to the depreciation due to exposure, or suspicion of exposure, to infection or contagion: *Provided, however*, That if the carcass of any animal so slaughtered shall be sold for more than the amount which the owner would be entitled to receive as compensation aforesaid, the excess shall be paid to such owner: *And provided further*, That no compensation shall be made under the provisions of this section or otherwise to any person who shall willfully have concealed the existence of disease among his animals or upon his premises, or who shall in any way by act or by willful neglect have contributed to the spread of the disease sought to be suppressed or prevented from spreading.

SEC. 4. This act shall take effect immediately.

AN ACT in relation to infectious and contagious diseases of animals.

The people of the State of New York, represented in senate and assembly, do enact as follows:

SECTION 1. Whenever in his judgment, for the more speedy and economical suppression, or for preventing the spread of any infectious or contagious disease of domestic animals, the public welfare shall be promoted thereby, the governor shall have, in addition to the powers conferred upon him by chapter 134 of the laws of 1878, the power to cause to be slaughtered and to be disposed of afterwards as in his judgment may be expedient, any animal or animals which, by contact or cohabitation with diseased animals, or by other exposure to infection or contagion may be considered or determined after examination to be liable to contract or to communicate the disease sought to be suppressed or to be prevented from spreading.

SEC. 2. The actual value at the time they are killed of any animals slaughtered under the provisions of chapter 134 of the laws of 1878 or of this act, to be ascertained and determined as hereinafter provided, shall be paid to the owners of such cattle. For the purpose of ascertaining and determining the value of the animals so slaughtered, the agent that may have been appointed by, and shall be acting for, the governor under said acts shall appoint one appraiser, the owner of the cattle killed shall appoint another, and the two thus appointed shall select a third, and these together shall proceed to appraise the amount so to be paid to the owner of such cattle. The board of claims shall have exclusive jurisdiction to hear, audit, and determine all claims which shall arise under the provisions of this act and to allow thereon such sums as should be paid by the State, provided that no compensation shall be made under the provisions of this section, or otherwise, to any person who shall willfully have concealed the existence of disease among his animals or upon his premises, or who shall in any way, by act or by willful neglect, have contributed to the spread of the disease sought to be suppressed or prevented from spreading.

SEC. 3. This act shall take effect immediately.

Passed May 31, 1884.

NEW MEXICO.

AN ACT to prevent the introduction of diseased cattle into the Territory of New Mexico, approved March 19, 1884.

Be it enacted by the legislative assembly of the Territory of New Mexico, It shall be unlawful for any person or corporation to drive or transport, or cause or procure to be driven or transported, into the Territory of New Mexico, any cattle which are, or within twelve months prior to their introduction into this Territory have been, affected with, or exposed to, any contagious or infectious disease, or which within such period have been driven or transported from or through any district of country where such disease was known to exist at the time of such driving or transporting, or without the certificate of the inspection of cattle, as hereinafter provided, being first obtained.

SEC. 2. The governor shall appoint, at such convenient points as he may deem proper within the Territory, and as near as possible to the frontier, inspectors of cattle, whose duty it shall be to inspect all cattle destined for introduction into the Territory, and to ascertain whether any of such cattle are, or have been, infected with, or exposed to, any contagious or infectious disease, or have been driven or transported from or through any district of country where such disease was known to exist, as mentioned in section 1 of this act, and for this purpose he may require affidavits of the persons in charge of such cattle as to all the facts connected with their driving or transporting.

SEC. 3. If upon such inspection and investigation such inspector shall be satisfied that such cattle are free from contagious or infectious disease, and are otherwise proper to be admitted under the provisions of section 1 of this act, he shall give to the person in charge of such cattle a certificate to this effect, and if not so satisfied he shall refuse to give such certificate.

SEC. 4. The said inspectors shall hold their offices during the pleasure of the governor, and shall be entitled to receive $1 per head for all high grade or thoroughbred cattle inspected, and 20 cents per head for all other cattle inspected, not exceeding 1,000 head at one time, and for any excess above 1,000 in the same herd or lot, 10 cents per head, and 10 cents per mile for the distance necessarily traveled in going from their usual place of abode to the place of inspection, such fees and mileage to be paid by the owner of the cattle before the delivery of the certificate of inspection, and in case a certificate is not given they may be recovered by the inspector from the owner in a civil action.

SEC. 5. For the purpose of taking the affidavits mentioned in section 2 of this act the inspector shall have power to administer oaths, and any person who shall swear falsely in such affidavit shall be deemed guilty of perjury.

SEC. 6. The provisions of this act shall apply to shippers and carriers as well as owners of cattle, and the certificate of the inspector shall not relieve them from lia-

bility, either criminal or civil, for the introduction of cattle contrary to the provisions of section 1 of this act.

SEC. 7. The inspector may appoint a deputy, who may act in his absence.

SEC. 8. Every person having charge of cattle destined for introduction into this Territory, whether as owner or carrier, or as agent of either, shall, at least ten days beforehand, notify the inspector nearest the proposed point of entrance to the Territory of the time and place, when and where such cattle will be ready for inspection, which place shall be beyond the boundary line of the Territory, and he shall hold the cattle at the place so designated until inspected.

SEC. 9. Any inspector who shall knowingly give a false certificate, or shall, without good cause under this act, refuse to give a certificate of inspection, or shall willfully delay in making inspection when notified, shall be deemed guilty of a misdemeanor, and shall be liable to the injured party for damages arising from such refusal or delay.

SEC. 10. Any person or corporation who shall violate the provisions of section 1 of this act shall be punished by a fine of $5,000 for each offense, to be imposed by the court on conviction upon indictment or information, or to be recovered as a penalty by the Territory in a civil action; and shall also be liable for all damages resulting therefrom. Each lot or herd of cattle unlawfully brought into the Territory shall constitute a separate offense.

SEC. 11. This act shall take effect from and after its passage.

AN ACT fixing a bond for the inspectors of cattle, approved April 1, 1884.

Be it enacted by the legislative assembly of the Territory of New Mexico, That the inspectors appointed under the provisions of an act entitled "An act to prevent the introduction of diseased cattle into the Territory of New Mexico," shall, and hereby are required to give a bond to the Territory, to be approved by the governor, in the penal sum of $5,000, for the faithful discharge of the duties pertaining to such office: *Provided,* Any person damaged by the improper or malicious action of any one of said inspectors may bring an action therefor in the name of the Territory against said inspector and his sureties on his official bond, and shall recover thereon the amount of such damage, not exceeding the penalty of said bond.

SEC. 2. This act shall take effect and be in force from and after its passage.

AN ACT with reference to an act entitled "An act to prevent the introduction of diseased cattle in the Territory of New Mexico." (Suspends operation of said act approved March 19, 1884.) Approved April 3, 1884.

Be it enacted by the legislative assembly of the Territory of New Mexico, That the governor of the Territory of New Mexico is hereby authorized, whenever in his judgment the circumstances and public interest warrant and require him to do so, from time to time to suspend by proclamation the operation of an act entitled "An act to prevent the introduction of diseased cattle in the Territory of New Mexico," approved March 19, 1884, or by proclamation to put the same in force at any time when suspended that he may believe the circumstances or public interest require said act to be in force. Said act is hereby suspended in its operation and effect from this date until the same may by the governor be placed in operation and effect by his proclamation to that end.

SEC. 2. This act shall be in full force and effect from and after its passage.

NORTH CAROLINA.

In the act passed in 1883 to establish a department of agriculture occurs the following provisions for the investigation of diseases of domestic animals:

The board (of agriculture) is specially charged with investigations relating to the diseases of cattle and other domestic animals, and shall publish and distribute from time to time circulars of information relative to any contagious diseases of stock, and shall have power in such cases to quarantine infected animals and to regulate the transportation of stock in this State or from one section of it to another; and any person willfully violating such regulations shall be guilty of a misdemeanor.

OHIO.

AN ACT to suppress and prevent dissemination of epizootic and communicable diseases of domestic animals in the State of Ohio.

SECTION 1. *Be it enacted by the general assembly of the State of Ohio,* That the governor shall, with the advice and consent of the senate, appoint three persons, who shall constitute a board of live-stock commissioners, who shall hold their office in the

order in which they are named: The first for one year, the second for two years, and the third for three years, and their successors in office shall be appointed for three years each. They shall meet as soon as practicable after their appointment, and after taking the oath of office shall appoint from their number a president and secretary.

SEC. 2. The board of commissioners are authorized to use all proper means to prevent the spread of dangerous and fatal diseases among domestic animals, and to provide for the extirpation of such diseases; and in the event of any such contagious or infectious disease breaking out in this State, it shall be the duty of all persons owning or having in charge animals infected with the same, to immediately notify said board of commissioners, or some member thereof, of the existence of such disease, and thereupon it shall be the duty of said board immediately to cause proper examination thereof to be made by a competent veterinarian; and if said disease shall be found to be a dangerously contagious or infectious malady, the board shall order the diseased animals, and such as have been exposed to contagion, to be strictly quarantined in charge of such person as the board, or an authorized member thereof, shall designate, and to order any premises or farms where such disease exists, or has recently existed, to be put in quarantine, so that no domestic animals, subject to such disease, be removed from, or brought to, the premises or places so quarantined; and the board shall prescribe such regulations as they may deem necessary to prevent the contagion from being communicated in any way from the premises so quarantined.

SEC. 3. The bodies of all dead animals shall be buried or burned by the owners thereof, as provided by law.

SEC. 4. Any person having in his possession, or under his care, any animal which he knows, or has reason to believe, is affected with (a) dangerously contagious or infectious disease, and does not, without unnecessary delay, make known the same to said board, or some member thereof, or to the sheriff or constable of the proper county, to be by him communicated to said board; or any person or corporation who shall bring into this State, or sell or dispose of any animal, knowing the same to be affected as aforesaid, or any animal having been exposed to such contagion, within three months of such exposure, or shall move the animal so diseased or exposed from the quarantine to which it was ordered by the board of commissioners, without the consent of said board, shall, upon conviction of either of the aforesaid offenses, be fined in any sum not exceeding $500.

SEC. 5. The board of commissioners shall keep a record of their acts and investigations of diseases of live stock, and report the same to the governor on the first Monday of November, annually, and at such other times as the governor may order; and such parts of said reports as shall be of general interest to breeders of live stock may be transmitted to the Department of Agriculture, to be published with their proceedings. Said board shall receive for their services the sum of $4 per day and necessary traveling expenses for each day any member is actually engaged in the investigation of reported cases of outbreaks of disease as herein provided, or in arranging for the quarantine of diseased animals, and other duties connected therewith; and when it becomes necessary for said board to employ any veterinarian, sheriff, constable, or such other persons as may be deemed essential to assist the commissioners in performing their duties, as set forth in this act, they are authorized to fix and certify their compensation, a properly itemized account of which shall be made out and certified by the board, and paid upon the order of the governor.

SEC. 6. For the purpose of carrying into effect the provisions of this act, the sum of $1,000, or so much thereof as may be necessary, is hereby appropriated out of any funds not otherwise appropriated.

A. D. MARSH,
Speaker of the House of Representatives.
ELMER WHITE,
President pro tem. of the Senate.

Passed April 29, 1885.

PENNSYLVANIA.

AN ACT to prevent the spread of contagious or infectious pleuro-pneumonia among cattle in this State.

SECTION 1. *Be it enacted, &c.*, That whenever it shall be brought to the notice of the governor of this State that the disease known as contagious or infectious pleuro-pneumonia exists among the cattle in any of the counties of this State, it shall be his duty to take measures to promptly suppress the disease and prevent it from spreading.

SEC. 2. That for such purpose the governor shall have power, and he is hereby authorized, to issue his proclamation, stating that the said infectious or contagious disease exists in any county or counties of the State, and warning all persons to seclude all animals in their possession that are affected with such disease or have been exposed to the infection or contagion thereof, and ordering all persons to take such

precautions against the spreading of such disease as the nature thereof may, in his judgment, render necessary or expedient; to order that any premises, farm, or farms where such disease exists or has existed be put in quarantine, so that no domestic animal be removed from said places so quarantined, and to prescribe such regulations as he may judge necessary or expedient to prevent infection or contagion being communicated in any way from the places so quarantined; to call upon all sheriffs and deputy sheriffs to carry out and enforce the provisions of such proclamations, orders, and regulations, and it shall be the duty of all the sheriffs and deputy sheriffs to obey and observe all orders and instructions which they may receive from the governor in the premises; to employ such and so many medical and veterinary practitioners and such other persons as he may from time to time deem necessary to assist him in performing his duty as set forth in the first section of this act, and to fix their compensation; to order all or any animals coming into the State to be detained at any place or places for the purpose of inspection and examination; to prescribe regulations for the destruction of animals affected with the said infectious or contagious disease, and for the proper disposition of their hides and carcasses, and of all objects which might convey infection or contagion (provided that no animal shall be destroyed unless first examined by a medical or veterinary practitioner in the employ of the governor, as aforesaid); to prescribe regulations for the disinfection of all premises, buildings, and railway cars, and of objects from or by which infection or contagion may take place or be conveyed; to alter and modify, from time to time, as he may deem expedient, the terms of all such proclamations, orders, and regulations, and to cancel or withdraw the same at any time.

SEC. 3. That all necessary expenses incurred under direction or by authority of the governor in carrying out the provisions of this act shall be paid by the treasurer upon the warrant of the auditor-general, on being certified as correct by the governor: *Provided*, That animals coming from a neighboring State that have passed a veterinary examination in said State, and have been quarantined and discharged, shall not be subject to the provisions of this act.

Approved, May 1, 1879.

HENRY M. HOYT.

RHODE ISLAND.

Of contagious disease among cattle.

SECTION 1. Every person bringing into the State any neat cattle or other animals which he knows to be infected with any infectious or contagious disease, or who shall expose such cattle or other animals known to him to be so infected to other cattle and animals not infected with such disease, shall be fined not less than $100 nor more than $500.

SEC. 2. The town councils of the several towns may pass such ordinances as they may think proper to prevent the spread of infectious or contagious diseases among cattle and other animals within their respective towns, and may prescribe penalties for the violation thereof, not exceeding $20 for any one offense.

SEC. 3. The State board of health may prohibit the introduction of any cattle or other domestic animals into the State. Every person who shall bring, transport, or introduce any cattle or other domestic animals into the State, after said board or any one of them shall have issued an order forbidding the same, or after said board shall have published for five successive days in such newspapers published in this State as the said board may direct, an order forbidding such introduction shall be fined not exceeding $300 for every such offense; and every officer or agent of any company, or other person who shall violate such order, shall be subject to the fine aforesaid. In case of the introduction into the State of cattle or other domestic animals contrary to the order of said board, the introduction of each animal shall be deemed a separate and distinct offense.

SEC. 4. Said board shall endeavor to obtain full information in relation to any contagious disease which may prevail among cattle or other domestic animals near the borders of the State, and shall publish and circulate such information in their discretion; and should any such disease break out, or should there be reasonable suspicion of its existence among cattle or other domestic animals in any town in the State, they shall examine the cases and publish the result of their examination for the benefit of the public.

SEC. 5. Said board may appoint suitable and discreet persons, on or near the several highways, turnpike roads, railroads, and thoroughfares in the State, who shall inquire into all violations of this chapter and report the same to said board.

SEC. 6. Every person who shall sell or offer to sell any cattle or domestic animals, or any part thereof, known to him to be infected with any contagious disease, or with any disease dangerous to the public health, or who shall sell, or offer to sell any milk

from any such cattle or other domestic animals, shall be fined not exceeding $1,000 or be imprisoned not exceeding two years, either or both, in the discretion of the court.

SEC. 7. Said board may make all necessary regulations for the prevention, treatment, cure, and extirpation of such disease, and the value of all cattle or other domestic animals killed on the written order of said board shall be appraised by three disinterested persons to be appointed by said board, such appraisal to be made immediately before the cattle or other domestic animals are killed, and the amount of such appraisal shall be paid by the State to the owner of such cattle or other domestic animals; and every person who shall fail to comply with any regulation so made shall be fined not exceeding $300 or be imprisoned not exceeding one year.

SEC. 8. Whenever said board shall make and publish any regulations concerning the extirpation, cure, or treatment of cattle or other domestic animals infected with, or which have been exposed to any contagious disease, such regulations shall supersede the regulations made by the authorities of the several towns and cities upon the same subject; and the operation of such regulations made by said authorities shall be suspended during the time those made by said board shall be in force.

SEC. 9. All orders, appointments, and notices from said board, except the order of notice provided for in section 3, shall bear the signature of the president or chairman and secretary.

SEC. 10. All prosecutions for offenses against the provisions of this chapter shall be commenced within thirty days after the same shall have been committed, and not afterwards.

TENNESSEE.

AN ACT to prevent the spread of contagious pleuro-pneumonia in Tennessee and to provide for payment for property destroyed in certain cases.

SECTION 1. *Be it enacted by the general assembly of the State of Tennessee,* That as soon as practicable after the passage of this act the governor of Tennessee shall appoint a live-stock sanitary commission, composed of three freeholders of the State, over twenty-five years old, whose duty it shall be to act under the orders of the governor, and examine any cattle in Tennessee reported to the governor as being affected with contagious pleuro-pneumonia, said commission to act when and as hereinafter provided.

SEC. 2. *Be it further enacted,* That if the governor shall at any time receive information, given by affidavit of any citizen of the State, made before any justice of the peace in the State, that said citizen is reliably informed that there has been brought into the State of Tennessee any animal or animals suffering from or that have been exposed to the disease known as contagious pleuro-pneumonia, or that such animal or animals are at any time in the State of Tennessee sick from contagious pleuro-pneumonia, or that have been exposed to such disease, and state where such animals are located in the State, and in the opinion of the governor and the chief of the bureau of agriculture, statistics, and mines of the State, the danger of the spread of such disease shall warrant the expense, then the governor shall, acting in conjunction with the chief of the department of agriculture of the State, and with such aid as the said chief of said department can or is authorized by law to give, quarantine such animal or animals until such time as in their opinion all danger shall have passed; or, if in their opinion it may be cheaper and safer to have such animal appraised and slaughtered, it shall be the duty of the governor to summon said sanitary commission, appointment of which is herein provided for, and said commission shall have the power to enter upon the premises where said cattle are in quarantine, and shall go to said place and notify the owner of said animal or animals in writing, that on a day fixed in the notice, not less than five nor more than ten days from the service of said notice, said commissioner will examine said animal or animals in conjunction with the representative of the chief of the Department of Agriculture of the United States, and hear testimony touching the sickness of said animal or animals, or exposure of same to disease known as contagious pleuro-pneumonia; and said commission shall swear witnesses which they shall have power to summon as any justice of the peace would, and in same manner, by subpœna directed to any officer, and shall hear proof, including testimony of experts, touching the sickness or exposure of said animal or animals to contagious pleuro-pneumonia; and it shall have power to continue the investigation from day to day till they are satisfied, and shall determine the fact whether said animal or animals are affected with or have been exposed to contagious pleuro-pneumonia, and if in their opinion the safety of the domestic animals in Tennessee demands, or it be necessary to prevent the further spread of disease among the live stock of the State, to destroy the animal or animals so found to be affected with or to have been exposed to said disease, as hereinafter provided; said commission shall determine what animals are affected with or have been exposed to said disease, and what animals shall be killed, and shall appraise the same and have them slaughtered, as hereinafter pro-

vided, and their carcasses buried; and shall, if they think best, cause the bedding to be burned and have the place disinfected and managed as in their judgment will best protect the live stock of the State.

SEC. 3. *Be it further enacted*, That whenever, as in section second provided, the commission shall direct the killing of any animal or animals or destruction of other property, they shall appraise said animal or animals or property condemned or destroyed, and make an inventory of the same and furnish the owner or person in charge of said animal or animals with a copy of the same, and if the owner is dissatisfied with the appraised value of the same, he shall notify said commission in writing at or before the time—the day of the slaughter—that he is not satisfied with the appraisement of the same, and demands a trial in the circuit court; and in case the owner so notifies the commission, they shall file said inventory with the clerk of the circuit court of the county where the animals are, and the clerk of said court shall enter the case on the docket of said court under the style of the State of Tennessee against the owner of the animal or animals, giving his name as defendant; and it shall be the duty of the court to cause a jury to be impaneled to try the question of the value of said property so destroyed between the State and said party, and hear proof touching the diseased condition of said animals, or exposure of same to disease, and fix their value at date of appraisement and slaughter thereof, taking into consideration that diseased condition or exposure of same to disease; and if the jury find said property worth more than the appraised value, the value as ascertained shall be allowed; if less, the value found allowed, and their verdict shall be entered on the minutes. The appraised value of the cattle authorized to be slaughtered shall not be more than the value of so many pounds of cattle for beef, according to the market value. There shall be no compensation given by said commissioners for any cattle which are, at the time of inspection, infected with the disease known as pleuro-pneumonia.

SEC. 4. *Be it further enacted*, That either the State or defendant, if not satisfied with the verdict, may move for a new trial or appeal, as in any other civil case in which the State is plaintiff and other party defendant.

SEC. 5. *Be it further enacted*, That the attorney-general of the district in which said case is shall attend to the same, and receive such compensation as he receives in felony cases.

SEC. 6. *Be it further enacted*, That if the owner of animal or animals slaughtered by order of the commission does not notify said commission on the day of the slaughter or destruction of same, in writing, as provided, that he demands a trial in the circuit court, the commission shall furnish the owner with a copy of their inventory and appraisement, and file the original of same with the governor; and the governor shall, upon the filing of the same by the commission, or upon filing the copy by the owner, issue an order on the comptroller to give the owner a warrant on the treasurer for the amount due the owner as fixed in said inventory, or so much thereof as remains unassumed and paid by the United States.

SEC. 7. *Be it further enacted*, That if there are more than one and joint owners of said property, the notice herein provided and the copy of the inventory may be given to either of them; and if the owner cannot be found, may be given to the person in charge of said property or animal at the time of the inspection and slaughter of same or destruction of the same.

SEC. 8. *Be it further enacted*, That, upon application of the owner to the clerk of the court in which the final decree is entered, in any case tried under the provisions of this act, by the owner, the clerk shall deliver to the owner a certified copy of the decree, and he may file the same with the governor, and the governor shall give an order on the comptroller, who shall issue his warrant on the treasurer for the amount found due by said decree to the owner, or as much of the same as remains unpaid by the United States.

SEC. 9. *Be it further enacted*, That if any person shall hereafter bring into this State any cattle knowing the same to be affected with or to have been exposed to contagious pleuro-pneumonia, it shall be the duty of the commission, when they cause the same to be destroyed, to report that fact either to the governor or court, as herein provided; to the court if the fact is disputed or the appraisement of cattle is demanded to be reported to the court; to the governor if not disputed.

SEC. 10. *Be it further enacted*, That if the fact is disputed it shall be submitted to the jury, as provided herein, as one of the issues to be tried by them, and their finding shall be spread on the minutes, with the finding of the value of the cattle.

SEC. 11. *Be it further enacted*, That if it appears to the governor, either from the report of the commission in any case in which a trial is not demanded in the circuit court, or from the final decree, as provided herein, that any owner of cattle so slaughtered brought the same into this State after the passage of this bill, knowing that said cattle were affected with contagious pleuro-pneumonia, or had been exposed to the same, the governor shall not issue any order for payment for same.

SEC. 12. *Be it further enacted*, That either party dissatisfied with the report of the jury as to knowledge of the disease, or exposure to such disease, as provided in section 10, may have the right of motion for new trial or appeal as in other cases.

SEC. 13. *Be it further enacted,* That the governor may call on the sheriff of the county where the cattle are quarantined to appoint some person to enforce the quarantine of cattle.

SEC. 14. *Be it further enacted,* That it shall be the duty of the commission to have with them a competent veterinary surgeon when they examine and slaughter said animals. They will, through the governor, apply to the Chief of the Department of Agriculture of the United States for such assistance, but if this cannot be had the governor is authorized to appoint and employ for any such investigation a veterinary surgeon skilled in such diseases, and the commission shall make a part of their report the report of the said surgeon on the *post mortem* examination of slaughtered animals.

SEC. 15. *Be it further enacted,* That the commissioners shall each receive $2 per day for each day actually engaged in duties, under the order of the governor, and mileage 3 cents, and their mileage shall be advanced to them by the governor out of the fund drawn for quarantine purposes. Witnesses summoned by order of the commission shall be paid, as witnesses in the circuit court, out of said quarantine fund, if the owner does not demand a trial in the circuit court, but in case the owner demands a trial in the circuit court the losing party shall pay the cost, but if the owner prove insolvent the State witnesses will be paid as in any other cases on return of *nulla bona.* Any person appointed by the sheriff shall receive $1 for each day serving as quarantine officer: *Provided,* The sheriff shall not appoint more than one such officer or deputy.

SEC. 16. *Be it further enacted,* That the comptroller, upon requisition of the governor, shall issue his warrant on the treasurer for such sums as may be necessary to meet the expenses of inspecting and quarantining said animals, to be paid out of the funds hereinafter appropriated.

SEC. 17. *Be it further enacted,* That the sum of $5,000 is hereby specially appropriated to carry out the provisions of this act.

SEC. 18. *Be it further enacted,* That no person, firm, or company shall be paid for any cattle under the provisions of this act who have purchased and brought into this State, or who may hereafter purchase and bring into this State, any cattle which have been affected with or have been exposed to pleuro-pneumonia, and such fact was known to or might upon inquiry have been ascertained by such person, firm, or company before or at the time of said purchase, or before or at the time of bringing said cattle into this State.

SEC. 19. *Be it further enacted,* That this act shall take effect from and after its passage, the public welfare requiring it.

Passed, June 9, 1885.

C. R. BERRY,
Speaker of the Senate.
J. A. MANSON,
Speaker of the House of Representatives.

Approved, June 10, 1885.

W. B. BATE,
Governor.

VERMONT.

CHAPTER 181.—*Preservation of cattle and sheep.*

SEC. 4011. When sheep are infected with the "hoof-ail" or "foot-rot," or with the scab, the owner or keeper shall restrain them from running at large in the public highways or commons, and keep them in an inclosure; and if he, knowing them to be diseased, knowingly permits them to go at large upon a common or public highway, or if such sheep, while so diseased, are found in an inclosure other than that of such owner or keeper, he shall forfeit to the town where such offense is committed $10, to be recovered by an action of debt on this statute, in the name of such town; and he shall be further liable in an action on the case, founded upon this statute, for damages suffered by a person in consequence.

SEC. 4012. If sheep infected with the "hoof-ail" or "foot-rot" are found at large upon a common, public highway or lane, or lands not owned or occupied by their owner or keeper, through the neglect of such owner or keeper, said sheep shall become forfeit to any person who takes them up, and the owner of such sheep shall not have an action at law or equity for their recovery.

Pleuro-pneumonia and other contagious diseases.

SEC. 4013. A person who drives or brings neat cattle into a town in this State from another State, or is accessory thereto, knowing that any of them have the disease, or have been exposed to the disease known as pleuro-pneumonia, shall forfeit to the town not more than $500, or be imprisoned not more than twelve months and not less than one month, in the discretion of the court.

SEC. 4014. A town, at a meeting held for that purpose, may establish regulations, appoint officers or agents, and raise and appropriate money to prevent and arrest the spread or circumscribe the effect of the cattle disease known as pleuro-pneumonia, as such town deems expedient.

SEC. 4015. The selectmen may perform all acts and make all rules and regulations for and in behalf of the town necessary to carry into effect the powers conferred on the town by this chapter until the town otherwise orders at a meeting holden for that purpose.

SEC. 4016. Every person bringing into this State any neat cattle or other domestic animals which he knows to be infected with infectious or contagious disease, or who shall expose such cattle or other animals known to him to be so infected to other cattle and animals not infected with such disease, shall be fined not less than $100 nor more than $500.

SEC. 4017. The selectmen of the several towns and the board of aldermen of the several cities of this State may make and enforce such regulations as they may think proper to prevent the spread of infectious or contagious diseases among cattle and other domestic animals, within their respective towns and cities, and shall inquire into all such cases coming to their knowledge, and shall immediately report the same to the governor. Any person who shall knowingly violate or refuse to obey any such regulation made by such town or city authorities shall be liable to a fine of $100.

Cattle commissioners.

SEC. 4018. The governor may appoint a board of cattle commissioners, to consist of three members, whenever in his judgment the public safety may require, and may terminate their commissions whenever in his judgment the public safety may permit. The compensation of such commissioners shall not exceed $3 each per day for actual service, in addition to their traveling and other expenses necessarily incurred.

SEC. 4019. Such commissioners may prohibit the introduction of any cattle or other domestic animals believed to be infected with any contagious disease, or having been exposed thereto, into this State, but may not prohibit the transportation of the same in cars through the State. And every person who shall bring, transport, or introduce any cattle or other domestic animals into this State after said commissioners have issued an order forbidding the same, and such order shall have been published for three successive days in such newspapers published in this State as the commissioners may direct, shall pay to the treasurer of the State a fine of not more than $300 for every offense, and every officer or agent of any company or other person who shall violate such order shall be subject to the fine aforesaid. In case of the introduction into this State at the same time of a number of cattle or other domestic animals contrary to the orders of such commissioners, the introduction of each animal shall be deemed a separate and distinct offense.

SEC. 4020. Such commissioners shall endeavor to obtain full information in relation to any contagious disease which may prevail among cattle or other domestic animals near the borders of the State, and shall publish and circulate such information at their discretion; and should any such disease break out, or should there be reasonable suspicion of its existence among cattle or other domestic animals in any town in this State, they shall examine the cases and publish the result of their examination for the benefit of the public. Such commissioners are also hereby authorized to examine under oath, in the several towns and cities in this State, all persons possessing or believed to possess knowledge of any material facts concerning the existence or dissemination, or danger of dissemination, of diseases among cattle or other domestic animals, and for this purpose shall have all the power now conferred by law upon justices of the peace to compel the attendance and testifying of such witnesses; and all costs and expenses incurred in procuring the attendance of such witnesses shall be allowed and paid to the commissioners from the treasury of the State, upon the same being certified to the governor and approved by him; and the auditor of accounts is hereby authorized to draw his order on the treasurer for such sum as shall be so certified and approved.

SEC. 4021. When any contagious disease exists in the State among cattle or other domestic animals, said board may quarantine all infected animals, or such as they suppose have been exposed to contagion, may prohibit any animal from passing on or over any of the highways near the place of quarantine, may enter upon any premises where there are animals supposed to be infected with any disease, and make all investigations and regulations necessary for the prevention, treatment, cure, and extirpation of such disease, and any person who shall knowingly violate or refuse to obey any regulation or order of such commissioners shall be liable to a fine of $100 for each violation or refusal.

SEC. 4022. If any person during the existence of said board shall sell or offer to sell any cattle or other domestic animal, or any part or parts thereof, known to him to be infected with any contagious disease, or with any disease dangerous to the

public health, he shall be fined not more than $1,000, or be imprisoned not exceeding two years, or both, at the discretion of the court.

SEC. 4023. The value of all cattle or other domestic animals killed by the written order of the commissioners, shall be appraised by three disinterested persons to be appointed by the commissioners, such appraisal to be made just before the cattle or other domestic animals are killed; and the amount of such appraisal shall be paid by the State to the owner of such animals; and every person who shall fail to comply with any regulation by them so made, shall be fined not more than $300, or be imprisoned not more than one year.

SEC. 4024. Whenever the commissioners shall make and publish any regulations concerning the extirpation, cure, or treatment of cattle or other domestic animals infected with or which have been exposed to any contagious disease, such regulations shall supersede the regulations made by the selectmen of the several towns, or the board of aldermen of the several cities, upon the same subject; and the operation of such regulations made by said authorities shall be suspended during the time those made by the commissioners as aforesaid shall be in force.

SEC. 4025. The commissioners shall keep a record of their doings, and report the same to the governor in the month of September next after their appointment, unless sooner required by the governor.

SEC. 4026. All orders, appointments, and notices from the commissioners shall bear the signatures of a majority of said commissioners.

SEC. 4027. Every prosecution for a violation of any of the provisions of this [sections 4016 to 4026] shall be commenced within thirty days from the commission thereof.

VIRGINIA.

AN ACT to provide for an inspection of cattle.

Whereas cattle brought into this State from places east of the top of the Blue Ridge Mountains, in North Carolina, and south of the State of Tennessee, have spread infectious diseases among the cattle of this State, to the destruction of many valuable cattle and the serious loss of the owners thereof; and whereas it is necessary for the protection of the cattle of this State that there shall be a rigid inspection of all cattle brought into it from infected places; Therefore,

Be it enacted by the general assembly of Virginia, That it shall be unlawful to bring any cattle into this State between the 10th day of March and the 10th day of October of each year from any place south of the line separating Virginia from North Carolina and Tennessee, and a prolongation thereof to the Rocky Mountains, until the same shall have been inspected as provided for in this act, and pronounced free from disease, and not liable to communicate diseases to cattle in this State, or to infect any boat, car, or other vehicle in which they may be transported or conveyed, so that other cattle may thereby become infected or diseased: *Provided*, That nothing herein contained shall require any cattle raised in North Carolina west of the top of the Blue Ridge Mountains, or in Tennessee, or any oxen drawing wagons, carts, or other vehicles, or any milch cows brought into this State, or to cattle brought from the State of North Carolina to a county adjacent to said State, to be used for farm purposes or to be slaughtered in said county, to be inspected.

SEC. 2. The governor shall appoint eight inspectors of cattle, who shall during their terms of office reside as follows: One at the town of Goodson, one at Patrick Court-House, one at Danville, one at Norfolk or Portsmouth, one at Boykin's Depot, one at Hicksford, one at Covington, and one at Cumberland Gap. Each inspector shall qualify before the courts of the county or corporation in which he is to reside by taking the oaths required by section 1 of chapter 12, code of Virginia, edition of 1873, and by executing bond, with good security, in penalty of $5,000, conditioned for the faithful performance of duty. He shall continue in office two years from the date of his appointment and until his successor is qualified, unless sooner removed for good cause; and in case there is no inspector in any county the duties hereinafter prescribed may be performed by any justice of the peace of such county, in which case the fees for inspection shall be 25 cents.

SEC. 3. It shall be the duty of said inspectors to examine carefully all cattle brought, or attempted to be brought, into this State, which by the first section of this act are prohibited from being brought into it without inspection; and for the purposes of such examination any inspector may cause such cattle to be unloaded from any boat, car, or vehicle in which they may be. If he finds any diseased cattle, or any cattle having parasites, ticks, or anything about them liable to spread disease among the cattle of this State, or liable to infect any boat, car, or other vehicle in which they may be transported, so that other cattle transported in the same would probably become diseased, he shall at once brand with a hot iron on the left shoulder of each head of cattle that he may find so diseased or affected a letter "C," not less than 3 inches high and 1½ inches wide, and shall require the owner or person in charge of such cattle forthwith to remove the same from this State; and if the same is not in twelve hours

beyond the limits of this State, the same shall be forfeited, and the inspector shall cause the same to be killed, and the reasonable costs of killing, not to exceed $1.50 per head, shall be paid by the owner.

SEC. 4. It shall be the duty of all persons bringing into this State any cattle required to be inspected to notify the inspector nearest the point at which he desires to bring them into the State, and to keep them at the State line, or at such other point not more than one-half mile within the State, as the inspector may direct, until they have been inspected. Any inspector may require of each person bringing cattle into this State an affidavit that all of the cattle brought by him were raised north of the line separating Virginia from North Carolina and Tennessee, and the prolongation of such line to the Rocky Mountains, or in the State of Tennessee, or west of the top of the Blue Ridge in North Carolina; and may require any transportation company bringing cattle into the State, or its agents or servants, to exhibit the way-bill or other evidence used by such company to show where such cattle were shipped, but no way-bill or other evidence so shown to any inspector shall be used against such company, its agent or servant in any prosecution for violation of this act. The refusal of any person to make affidavit, or of any transportation company, its agent or other evidence when required in accordance with the provisions of this section shall be sufficient evidence that the cattle about which the same was required are liable to inpection, and the inspector shall proceed forthwith to inspect the same.

SEC. 5. It shall be unlawful for any transportation company knowingly to transport within this State any cattle required by this act to be inspected until the same are inspected. For each violation of this section and for each refusal of the company, its agent, or servant to exhibit the way-bill or other evidence as required by the preceding section, the company shall forfeit $1,000, to be recovered by presentment, indictment, or information in the court having jurisdiction of misdemeanor in any county or corporation through or in which such cattle may be transported or such refusal may occur.

SEC. 6. For each head of cattle inspected the inspector shall receive from the owner of the cattle the sum of 50 cents, and shall retain the cattle until the fees are paid. Each inspector shall retain as his compensation all inspection fees collected by him.

SEC. 7. Any person dissatisfied with the decision of any inspector, may complain to a justice of the peace of the county in which the inspection was made, who shall by warrant command the sheriff or some constable of the county to summon three freeholders of the county, to be named in the warrant, to examine the condemned cattle, and such freeholders shall, as soon as may be, and after being sworn by a justice of the peace for that purpose, examine the condemned cattle and approve or disapprove the decision of the inspector. If they approve it, the decision shall stand, and the owner shall pay the costs; if they disapprove it, the decision of the inspector shall be null and void, and the inspector shall pay the costs. The costs shall be as follows: Fifty cents to the justice for the warrant and execution; 50 cents to the officer executing the warrant for each person on whom it is served, and $1 each to the freeholders who attend. For the costs the justice may issue execution. The determination of any two of the freeholders shall be sufficient.

SEC. 8. After inspecting each lot of cattle, the inspector shall grant a certificate setting forth the date of inspection, name of the owner, number of cattle inspected, number condemned, and number which passed inspection. If desired by the owner or person in charge, he shall grant a separate certificate for every five head of cattle, specifying in it that they are a portion of a larger lot, the number in such larger lot, and whether or not any of such larger lot were condemned.

SEC. 9. Any person who shall bring into this State, without inspection, or shall knowingly have in his possession without their being inspected, any cattle required by this act to be inspected, shall be deemed guilty of a misdemeanor, and for each head of uninspected cattle shall be fined not less than $10, and may be confined in jail not exceeding ten days. Any person who shall bring into this State any cattle previously condemned by an inspector of cattle, shall be guilty of a misdemeanor, and for each head so brought into the State, shall be fined not less than $100, and confined in jail not less than ten days.

SEC. 10. When cattle are brought into this State from Tennessee or North Carolina, the burden of proof shall be on the person or corporation bringing them, to show that they were raised in Tennessee, or west of the top of the Blue Ridge, in North Carolina, and the person bringing them may be a witness in his own behalf; and in any prosecution for a violation of this act, the person prosecuted may be a witness in his own behalf: *Provided*: That cattle brought from the counties in North Carolina, east of the Blue Ridge, to be immediately slaughtered in the markets of Norfolk, Portsmouth, and Danville shall not be inspected.

SEC. 11. The word inspector, wherever it occurs in this act, shall be construed as if followed immediately by the words "of cattle," and the word "cattle" wherever used in this act shall be construed to include cows, calves, heifers, bulls, and steers.

SEC. 12. This act shall be in force from its passage.

Approved, April 2, 1879.

CHAPTER CII.—CODE OF VIRGINIA.

For the restraint and destruction of dangerous diseased and noxious animals.

Diseased horses not to be permitted to go at large; penalty.

1. Any justice, on proof that a horse afflicted with the glanders or farcy is permitted by the owner or keeper thereof willfully or negligently to go off his stable or inclosed grounds, or to run at large, shall order such horse to be killed and to be buried (with the hide on) 4 feet deep, at the expense of said owner or keeper, having first given to the owner of such horse, or to his agent, if any there be resident in the county or corporation, five days' notice of the time and place, when and where such order is proposed to be made. And such owner or keeper, or any person, who had owned said horse and parted with him, having knowledge that he was so afflicted, shall forfeit not less than $20 nor more than $100 to the use of the Commonwealth.

* * * * * * *

3. Every person shall so restrain his distempered cattle, or such as are under his care, that they may not go at large off the land where they belong, and no person shall drive any distempered cattle into or through the State, or from one place therein to another, except to remove them from one piece of ground to another contiguous piece of ground of the same owner; and when any such cattle shall die, the owner thereof, or person having them in charge, shall cause them to be buried with their hides on at least 4 feet deep. If any person shall offend against any of the provisions of this section he shall be fined $10 for each head of such cattle. [Section as amended by act approved March 1, 1884.]

4. Any justice, upon proof before him that any cattle are going at large, or are driven in or through his county or corporation, in violation of the preceding section, may direct the owner to impound them; and if he fail to do so, or suffer them to escape from the pound before obtaining from a justice a certificate that they may be removed with safety, the justice giving such direction, or some other justice, shall order them to be killed and buried 4 feet deep, with their hides on, but so cut that none may be tempted to take them up.

Mad dogs, or dogs that worry sheep, to be killed.

5. Any justice, on proof that any dog is mad or has killed or worried any sheep, shall order such dog to be killed.

6. If the owner of any dog so ordered to be killed shall conceal him or cause him to be concealed, to prevent the order from being executed, he shall forfeit $4 for every day such dog shall be so concealed.

Fees of officers for executing warrant.

7. The constable or any other person whom the justice or board of inspectors hereinafter mentioned may empower to execute the order as aforesaid to kill and bury any horse, cattle, or dog, shall have the following fees: In the case of a horse, $4; of cattle, $3, for each head; and for each dog, $1, to be paid by the owner in each case, if he be known and able to pay it; and if not, by the county or corporation, and if any officer to whom any such order is directed shall fail to execute it, he shall forfeit $10 in each case. [Section as amended by act approved March 1, 1884.] Board for inspection of cattle affected with Texas or Spanish fever, now appointed and notified thereof.

10. Upon the petition of twenty-five voters of any magisterial district or corporation in the State, the courts of the county or corporation being satisfied there is occasion therefor, shall appoint three competent and discreet freeholders of said district or corporation to form and constitute a board for the inspection of cattle in such district or corporation supposed to be distempered or afflicted with a disease known as the Texas or splenic fever, or other contagious disease; and such board, or a majority of them, shall have power and authority and shall perform the duties hereinafter mentioned. Said board shall be called the board of cattle inspectors for the district or corporation for which they shall be appointed. [Section as amended by act of March 1, 1884.]

11. Whenever the county court of any county in this State shall appoint a board for the inspection of cattle under this act, the clerk of the county court of such county shall, without delay, make out a commission to each member of said board, under the seal of the said court, which commission shall be signed by the judge of said court and countersigned by the clerk, and it shall be the duty of such clerk to deliver such commission without delay.

Meeting of board and mode of proceeding.

12. The board being thus appointed in any district or corporation, shall meet immediately after receiving their commissions, and having qualified in such court or taken the oath of office before any justice of the peace, select one of their number president of their board; where such oath of office is taken before a justice, he shall certify the fact to the clerk of such court. The president or any member of such board, shall, upon his personal knowledge, or upon information derived from others, that any Texas, Mexican, or Indian cattle, or cattle distempered or affected with the disease known as the Texas or splenic fever, or other contagious disease, or cattle in such a condition as to communicate any such disease, are roaming or feeding at large, or are kept in such district or corporation, or are being driven or transported into or through the district or corporation, under any pretext whatever, without delay give notice to the other members of the board of such information or knowledge, and they, or a majority of them, shall proceed to the place where such cattle may be in such district or corporation, and some member of the board shall notify the person or persons having such cattle in charge, that the board will proceed to an examination of said cattle, and also to hear proof, and to determine whether said cattle are liable to be condemned, and adjudged to be affected with what is commonly known as the Texas or splenic fever, or other contagious disease, or are capable of imparting the same or any other disease, and killed under the provisions of this chapter. [Section as amended by act of March 1, 1884.]

Examination of witnesses may call on sheriff for posse to execute their orders relative to diseased cattle.

13. Said board, or any member thereof, shall have power to administer oaths to any witnesses brought before them; and the president of said board, or any member thereof acting as such, may, whenever they deem it necessary, call upon the sheriff, or any constable of the county, who shall, when required to do so, assist them, and furnish a sufficient posse to stop any drove of cattle being driven, or about to be driven through their respective counties, and enforce all orders of said board necessary to carry out the provisions of this act.

May order cattle to be killed.

14. If, upon examination of such cattle and receiving evidence in relation thereto, the board find, adjudge, and decide said cattle to be diseased in such a manner, or to be in such a condition as to communicate the said Texas or splenic fever or other contagious or infectious disease, the president of the board, or other member acting as president, shall (unless the owner immediately kill and bury such cattle himself) issue, under his hand, a writ directed to the sheriff or any constable of the county, commanding him to kill and bury, as hereinbefore prescribed, all of such cattle, if such board shall think it necessary to prevent the imparting of said fever, or other disease, as aforesaid, to other cattle. [Section as amended by act of March 1, 1884.]

Punishment for resisting officer.

15. Any person or persons who shall knowingly and willfully obstruct, resist, oppose, assault, beat, or wound any officer while executing any writ or performing any of the duties required by this act, shall be arrested, and, upon conviction, shall suffer all the pains and penalties now prescribed by law, in case said officer had been engaged in the execution of any writ or order from any court.

Return of officer executing order of board.

16. The officer executing a writ under this act, shall make a return thereon, written five days thereafter, to the president of said board, stating in full and in what manner he executed such writ, how many cattle were killed, if any, and the president of the board shall cause such writ, with the return thereon, to be filed in the office of the clerk of the county court.

Vacancies in board supplied.

17. If the president of the board shall die, resign, or refuse to serve, or be absent, any other member of said board may act as president, and a majority of said board are hereby authorized to act and perform any duty imposed upon said board under this act, and the county court may fill any vacancy in said board in term time or vacation.

Term of office and compensation of inspectors.

18. Each person appointed inspector under this act, shall hold his office until his successor shall be appointed and qualified, and shall be allowed $2 per day for each day he may be actually employed, to be audited by the board of supervisors of the said county, and paid as other county expenses. All officers executing writs under or by virtue of any of the provisions of this act, shall be allowed the same fees as are allowed by law for similar services in other cases, to be paid out of the county treasury.

Officers not liable for damages.

19. No such inspector, or any officer acting under the authority of said board of cattle inspectors, shall be liable to any action or to pay any damages for executing or carrying out the provisions of this act, or any writ or process issued in pursuance thereof.

Liability for costs.

20. Whenever any cattle shall be ordered to be killed, as provided in this act, the party owning and also the party or parties driving such cattle, shall be liable for all the costs that may accrue in killing. The president or the person acting as president of said board of cattle inspectors, shall issue an execution for the amount of said costs against the owner or owners, and driver or drivers of such cattle, directed to the sheriff or constable of the county, which execution shall have the same force and effect as any other execution which is now by law directed to such officer and shall be made returnable to the president of said board. If such execution is returned not satisfied or returned satisfied in part, the county shall pay the amount not satisfied.

CHAPTER XXV.—AN ACT to amend and re-enact sections 3, 7, 10, 12, and 14, of chapter 102 of the code of 1873, in reference to diseased cattle, and the appointment of inspectors thereof.

SECTION 1. *Be it enacted by the general assembly of Virginia,* That sections 3, 7, 10, 12, and 14, of chapter 102 of the code of 1873, be amended and re-enacted so as to read as follows:

SEC. 3. Every person shall so restrain his distempered cattle, or such as are under his care, that they may not go at large off the land where they belong, and no person shall drive any distempered cattle into or through the State, or from one place therein to another, except to remove them from one piece of ground to another contiguous piece of ground of the same owner; and when any such cattle shall die, the owner thereof, or person having them in charge, shall cause them to be buried, with hides on, at least 4 feet deep. If any person shall offend against any of the provisions of this section, he shall be fined $10 for each head of such cattle.

SEC. 7. The constable, or any person whom the justice or board of inspectors hereinafter mentioned may empower to execute the order as aforesaid, to kill and bury any horse, cattle, or dog, shall have the following fees: In the case of a horse, $4; of cattle, $3 for each head; and for each dog, $1; to be paid by the owner in each case if he be known and able to pay it, and if not, by the county or corporation; and if any officer to whom any such order is directed, shall fail to execute it, he shall forfeit $10 in each case.

SEC. 10. Upon the petition of twenty-five voters of any magisterial district or corporation in the State, the court of the county or corporation being satisfied there is occasion therefor, shall appoint three competent and discreet citizens of said district or corporation to form and constitute a board for the inspection of cattle in such district or corporation supposed to be distempered or affected with a disease known as the Texas or splenic fever, or other contagious disease; and such board, or a majority of them, shall have power and authority and shall perform the duties hereinafter mentioned. Said board shall be called the board of cattle inspectors for the district or corporation for which they shall be appointed.

SEC. 12. The board being thus appointed in any district or corporation shall meet immediately after receiving their commissions, and having qualified in such court or taken the oath of office before any justice of the peace, select one of their number president of their board. Where such oath of office is taken before a justice, he shall certify the fact to the clerk of such court. The president or any member of such board shall, upon his personal knowledge or upon information derived from others that any Texas, Mexican, or Indian cattle, or cattle distempered or affected with the disease known as Texas or splenic fever or other contagious disease, or cattle in such a condition as to communicate any such disease, are roaming or feeding at large, or are kept in such district or corporation, or are being driven or transported into or through the district or corporation, under any pretext whatever, without delay give notice to the other members of the board of such information or knowledge, and they or a majority of them, shall proceed to the place where such cattle may be in such

district or corporation, and some member of the board shall notify the person or persons having such cattle in charge that the board will proceed to an examination of said cattle, and also to hear proof and to determine whether said cattle are liable to be condemned and adjudged to be affected with what is commonly known as the Texas or splenic fever, or other contagious disease, or are capable of imparting the same or any other disease, and killed under the provisions of this chapter.

SEC. 14. If, upon examination of such cattle and receiving evidence in relation thereto, the board find, adjudge, and decide said cattle to be diseased in such a manner or to be in such a condition as to communicate the said Texas or splenic fever, or other contagious or infectious disease, the president of the board or other member acting as president shall (unless the owner immediately kill and bury such cattle himself) issue under his hand a writ, directed to the sheriff or any constable of the county, commanding him to kill and bury, as hereinbefore prescribed, all of such cattle, if such board shall think it necessary to prevent the imparting of said fever or other disease, as aforesaid, to other cattle.

2. The officers of such cattle inspectors as may have been heretofore appointed under said chapter of said code or acts amendatory thereof are hereby vacated, and all acts and parts of acts in conflict herewith are hereby repealed.

3. This act shall be in force from its passage.

Approved, August 27, 1884.

WASHINGTON TERRITORY.

AN ACT to prevent the spread of scab or other infectious diseases among sheep in the counties of Walla Walla, Columbia, Whitman, Stevens, Yakima, and Klikitat.

SECTION 1. *Be it enacted by the legislative assembly of the Territory of Washington,* That there shall be elected, at the next regular election in the Territory of Washington, and at each succeeding regular election thereafter, in each of the counties of Walla Walla, Columbia, Whitman, Stevens, Yakima, and Klikitat, one qualified elector of each of said counties, who shall be known as sheep commissioner, who shall subscribe an oath, and enter into bonds to the county commissioners for the faithful performance of his duties, in such sum as the county commissioners shall designate; and it shall be their duty to examine all flocks of sheep in their respective counties, during the months of November and April of each year.

SEC. 2. That sheep commissioners shall have the power, if deemed necessary, to summon to his assistance, at any examination, competent persons, as experts, to assist him.

SEC. 3. That sheep commissioners, if upon examination of any sheep, flock, or flocks of sheep, shall find them free from scab, or other infectious disease, shall make and deliver to the owner or owners of said sheep, a certificate in writing, stating that at the date of such certificate said sheep were in a healthy condition; said certificate shall be recorded in a book kept for that purpose, before it shall be delivered.

SEC. 4. It shall be the duty of the sheep commissioner to make, within ten days after the examination, as provided in section 1 of this act, a statement, in writing, with his certificate attached thereto, which statement shall set forth the condition of each and every band or flock of sheep in their respective counties, and shall record the same in a book provided for that purpose, to be kept on file in the office of the county auditor of their respective counties.

SEC. 5. The sheep commissioner shall at any time upon complaint under oath being made to him, that any sheep within his county is infected with scab or other infectious disease, proceed at once to examine the sheep so complained of, and if such sheep are found to be so infected, then the certificate of the soundness of such sheep, which may have been issued, shall be annulled, and he shall enter on the margin of the record of such certificate the word "annulled," and the date thereof: *Provided,* That upon complaint being made as provided herein, and the same being found to be frivolous, or malicious, then the party making such complaint shall pay all of the costs of such examination.

SEC. 6. That no sheep shall be permitted to enter any county named in this act until the same shall have been examined by the sheep commissioner of the county which they wish to enter, and a certificate of the healthfulness of such sheep is issued by the said sheep commissioner to the owner or owners thereof.

SEC. 7. It shall be the duty of the sheep commissioner when notified that the owner or owners of any sheep wish to move the same into his county, to proceed, as soon as may be, to examine said sheep; and if found in a healthy condition, he shall deliver to the owner or owners thereof a certificate to that effect; whereupon such sheep shall be permitted to enter his county: *Provided,* That no sheep shall enter any of the counties mentioned in this act until such certificate has been obtained.

SEC. 8. If any person or persons shall drive or cause to be driven into any of the

counties mentioned in this act, without first having obtained a certificate of the healthfulness of such sheep, such person or persons shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be fined in any sum not less than $250, or more than $5,000, and in default of payment shall be committed to the county jail, at hard labor, until such fine and costs are paid.

SEC. 9. Any person or persons, now or hereafter, having ownership of or in any sheep infected by scab or any other infectious diseases, shall keep the same secure from contact with other sheep, and shall not be permitted to move or drive the same upon any highway, byway, or across any range where other sheep are liable to range or be driven: *Provided,* That the owner or owners of such sheep so infected may move the same by first obtaining a written permission of the sheep commissioner of the county wherein he wishes to move them, which permission shall state the manner in which they are to be moved, and the place to which they are to be moved and the route designated: *Provided,* That the sheep commissioner shall not give permission to any person or persons to move any sheep so infected across any range where healthy sheep are accustomed to range. Any person or persons violating any of the provisions of this section shall be guilty of a misdemeanor, and upon conviction thereof shall be fined in any sum not less than $250, nor more than $2,000.

SEC. 10. The sheep commissioner and his assistant shall each be allowed as compensation for their services at the rate of $3 per day for the time actually occupied in the performance of their duties, and 10 cents per mile for the distance necessarily traveled by him in examining the sheep of his county, which compensation shall be paid by the owner or owners of the sheep so examined, each according to the number of sheep possessed.

SEC. 11. The county commissioners of the several counties shall at their next regular session after the passage of this act, appoint a sheep commissioner, who shall serve until the next regular election and until his successor is elected and qualified.

SEC. 12. All acts and parts of acts in conflict with this act are hereby repealed.

SEC. 13. This act to take effect and be in force from and after January 1, 1880.

Approved, November 3, 1880.

Extract from code of Washington Territory, p. 181, *section* 933.

SEC. 933. If any person knowingly imports or brings within this Territory any horse, mule, or ass, affected by the disease known as nasal gleet, glanders, or button farcy, or suffer the same to run at large upon any common, highway, or uninclosed land, or use or tie the same in any public place or off his own premises, or sell, trade, or offer for sale or trade any such horse, mule, or ass, knowing the same to be so diseased, he shall be deemed guilty of a misdemeanor, and shall on conviction be punished by a fine of not less than $50 nor more than $500; and if any horse, mule, or ass reasonably supposed to be diseased with nasal gleet, glanders, or button farcy be found running at large without any known owner, it shall be lawful for the finder thereof to take such horse, mule, or ass so found before some justice of the peace, who shall forthwith cause the same to be examined by some veterinary surgeon or other person skilled in such diseases, and if on examination it is ascertained to be so diseased, it shall be lawful for such justice of the peace to cause such diseased animal to be immediately destroyed and buried; and the necessary expenses accruing under the provisions of this section shall be defrayed out of the county treasury.

WEST VIRGINIA.

AN ACT amending and re-enacting chapter 150 of the code of West Virginia, concerning the public health, passed March 15, 1882.

Be it enacted by the legislature of West Virginia, That chapter 150 of the code of West Virginia be, and the same is hereby, amended and re-enacted so as to read as follows:

SEC. 1. There shall be a State board of health in this State, consisting of two physicians residing in each Congressional district thereof, who shall be graduates of reputable medical colleges, and who shall have practiced medicine for not less than twelve years continuously. They shall be appointed by the governor and hold their office for a term of four years, unless sooner removed, as provided in this chapter. But the members of said board now in office shall, unless sooner removed therefrom, remain in office until their successors are appointed and qualified. On the 1st day of June, 1882, and in every second year thereafter, or as soon after said day as practicable, the governor shall appoint two members of said board for the term of two years. Vacancies in the said board shall be filled by the governor for the unexpired term. Any person so appointed may be removed from office by the governor for incompetency, neglect of duty, gross immorality, or drunkenness, or for any cause deemed necessary for the public good.

SEC. 5. The board shall take cognizance of the interests of the life and health of the inhabitants of the State, and shall make, or cause to be made, sanitary investigations and inquiries respecting the causes of diseases, especially of endemics, epidemics, and the means of prevention, the sources of mortality, and the effects of localities, employments, habits, and circumstances of life on the public health. They shall also investigate the causes of diseases occurring among the stock or domestic animals in the State, the methods of remedying the same, and shall gather information in respect to these matters and kindred subjects for diffusion among the people. They shall also examine into and advise as to the water supply, drainage, and sewerage of towns and cities, the ventilation and warming of public halls, churches, school-houses, work-shops, and prisons, the ventilation of coal mines, and how to treat promptly accidents resulting from poisonous gases. When they may believe there is probability that any infectious or contagious disease will invade this State, it shall be their duty to take such action, and adopt and enforce such rules as they may in the exercise of their discretion deem efficient in preventing the introduction and spread of such disease or diseases. The better to accomplish such objects, the board is empowered to establish and strictly maintain quarantine at such places as they may deem proper, and may adopt rules and regulations to obstruct and prevent the introduction and spread of infectious or contagious diseases to or within the State. They may enforce inspections of persons and articles of baggage or other goods of whatever character, as well as the purification of the same; and companies or individuals operating or controlling railroads, passenger coaches, public conveyances, and steamers plying the Ohio River, or its tributaries in this State, shall obey the rules and regulations when made and published by the board in some newspaper printed at or near the place where the danger is; and any owner or person having charge of such railway train, passenger coach, steamboat, or public or private conveyance, who shall refuse to obey such rules and regulations where so made and published, shall be guilty of a misdemeanor, and for each offense be fined not less than $50 nor more than $500, and be confined in the county jail not less than fifteen days, nor more than two months, at the discretion of the court.

Section 27 of Chapter XXXIX of the code of West Virginia is as follows:

27. To prevent injury from rabid animals, or animals suffering under any contagious or infectious disease, said court may require such animals, or any class of them, within the county, to be removed to or confined in an appointed place, or to be killed, and their carcasses buried or destroyed, or such other measures to be taken as will in its judgment be most effectual for the purpose.

WYOMING TERRITORY.

Be it enacted by the council and house of representatives of the Territory of Wyoming, That the governor of the Territory is hereby authorized to nominate, which nomination may be made upon the recommendation of the Stock Growers' Association of the Territory, and by and with the advice and consent of the council, appoint (without unnecessary delay after the passage of this act) a competent veterinary surgeon, who shall be known as the Territorial veterinarian, and on entering on his duties shall take an oath to well and truly perform his duties as provided by law.

SEC. 2. The duties of said veterinarian shall be as follows: To investigate any and all cases of contagious or infectious disease among domestic animals in this Territory of which he may have knowledge, or which may be brought to his notice by any resident in the locality where such disease exists. And it shall also be his duty, in the absence of specific information, to make visits of inspection to any locality where he may have reason to suspect that there is contagious or infectious disease; and to inspect, under the regulations of this act, all domestic animals that may arrive at any railroad station in this Territory, when these animals are such as to warrant the presumption that they are intended to remain in the Territory, and are to be, or may be, used for breeding purposes therein. And it shall be the duty of the owner, or, in his absence, of the person in charge of such animals, so arriving, to notify the Territorial veterinarian without delay, and not to allow such animals, or any of them, to leave the place of arrival until they shall have been examined by the veterinarian and his certificate obtained that all are free from disease. And no animal pronounced unsound by the veterinarian shall be turned loose, removed, or permitted to escape, but shall be held subject to the order of the veterinarian. Any person failing to comply with this provision shall be deemed guilty of misdemeanor, and, upon conviction, shall be fined not less than $50 nor more than $500 for each offense.

SEC. 3. In all cases of contagious or infectious disease among domestic animals in this Territory, the veterinarian shall have authority to order the quarantine of the infected premises, and in case such disease shall become epidemic in any locality in this Territory, the veterinarian shall immediately notify the governor of the Territory, who shall thereupon issue his proclamation forbidding any animal of the kind

among which said epidemic exists to be transferred from said locality without a certificate from the veterinarian showing such animal to be healthy.

SEC. 4. In any case of epidemic disease where premises have been previously quarantined by the Territorial veterinarian, as before provided, he is further authorized and empowered, when in his judgment necessary, to order the slaughter of any or of all diseased animals upon said premises, and of all animals that have been exposed to contagion or infection, under the following restrictions: Said order shall be a written one, and shall be made in duplicate, and there shall be a distinct order and duplicate for each owner of the animals condemned, the original of each order to be filed by the veterinarian with the governor, and the duplicate given to said owner. And, further, before slaughtering any animal or animals that have been exposed only and do not show disease, the veterinarian shall call in consultation with him two respectable practicing veterinarians or physicians, residents of the Territory, or, if this is impossible, then two reputable and well-known stock-owners, residents of the Territory, and shall have the written indorsement upon his order of at least one of said consulting physicians, or stock-owners, stating that said action is necessary, and the consent of the owner or person in charge, before such animal or animals shall be slaughtered.

SEC. 5. Whenever, as herein provided, the Territorial veterinarian shall order the slaughter of one or more animals, he shall at the time of making such order notify in writing the nearest justice of the peace, who shall thereupon summon three disinterested citizens (who shall be stock-owners) of the neighborhood to act as appraisers of the value of such animals. Said appraisers, before entering upon the discharge of their duties, shall be sworn to make a true and faithful appraisement, without prejudice or favor. They shall, after making their appraisement, return certified copies of their valuation, a separate one being made for each owner, together with an accurate description of each animal slaughtered (giving all brands, ear-marks, wattles, age, sex, and class, as to whether American, half-breed, or Texas), to the justice of the peace by whom they were summoned, who shall, after entering the same upon his record and making an indorsement upon each, showing it to have been properly recorded, return, it together with the duplicate order of the veterinarian, to the person or persons owning the animal slaughtered; and it shall be the duty of the Territorial veterinarian to superintend the slaughter of such animals as may be condemned, and also the destruction of the carcass, which latter shall be burned to ashes, and shall include every part of the animal and hide, and also excrement as far as possible. He shall cause the said slaughter and burning to be done as cheaply as practicable, and shall pay the expense from the contingent fund hereinafter provided, taking proper vouchers for the same.

SEC. 6. The Territorial veterinarian shall make a report at the end of every year to the governor, of all matters connected with his work, and the governor shall transmit to the several boards of county commissioners such parts of said report as may be of general interest to the breeders of live stock. The governor shall also give information in writing, as rapidly as he obtains it, to the various boards of county commissioners of each cause of suspicion or first eruption of disease in each locality, its course, and the measures adopted to check it.

SEC. 7. Whenever the governor of the Territory shall have good reason to believe that any disease covered by this act has become epidemic in certain localities in another State or Territory, or that conditions exist which render domestic animals liable to convey disease, he shall thereupon by proclamation schedule such localities and prohibit the importation from them of any live stock of the kind diseased into this Territory, except under such restrictions as he may deem proper. Any corporation, or person or persons, who, after the publishing of said proclamation, shall knowingly receive in charge any such animal or animals from any one of said prohibited districts, and transport or convey the same within the limits of this Territory, shall be deemed guilty of a misdemeanor, and, upon conviction, fined not less than $1,000 nor more than $10,000 for each and every offense, and shall further become liable for any and all damages and loss that may be sustained by any person or persons by reason of the importation or transportation of such prohibited animals.

SEC. 8. It shall be the duty of any person or persons who shall have or suspect that there is upon his or their premises any case of contagious or infectious disease among domestic animals to immediately report the same to the Territorial veterinarian; and a failure so to do, or any attempt to conceal the existence of such disease, or to willfully or maliciously obstruct or resist the said veterinarian in the discharge of his duty, as hereinbefore set forth, shall be deemed a misdemeanor, and any person or persons who shall be convicted of any one of the above acts or omissions shall be fined not less than $50 nor more than $500 for each and every offense, shall forfeit all claims for indemnity for loss from the Territory, and upon conviction a second time shall, in addition to the above-named fine, be imprisoned for a term not less than thirty days nor more than six months.

SEC. 9. The following regulations shall be observed in all cases of disease covered

by this act: (1) It shall be unlawful to sell, give away, or in any manner part with any animal affected with or suspected of contagious or infectious disease; and in the case of any animal that may be known to have been affected with, or exposed to, any such disease within one year prior to such disposal, due notice of the fact shall be given in writing to the party receiving the animal. (2) It shall be unlawful to kill for butcher purposes any such animal, to sell, give away, or use any part of it, or its milk, or to remove any part of the skin. A failure to observe these provisions shall be deemed a misdemeanor, and, on conviction, shall be punished by a fine not less than $100, nor exceeding $500. It shall be the duty of the owner or person having in charge any animal affected with, or suspected of, any contagious or infectious disease to confine immediately the same in a safe place, isolated from other animals, and with all necessary restrictions to prevent dissemination of the disease until the arrival of the Territorial veterinarian.

The above regulations shall apply as well to animals in transit through the Territory as to those resident therein, and the Territorial veterinarian, or his duly authorized agent, shall have full authority to examine, whether in car, or yards, or stables, all animals passing through the Territory or any part of it, and on detection or suspicion of disease to take possession of, treat, and dispose of said animals resident in the Territory.

SEC. 10. All claims against the Territory arising from the slaughter of animals under the provisions of this act, shall, together with the order of the veterinarian and the valuation of the appraisers, in each case be submitted to the Territorial auditor, who shall examine them without unnecessary delay, and for each one that he finds to be equitable and entitled to indemnity under this act, shall issue his warrant on the Territorial treasurer for the sum named in the appraiser's report.

In auditing any claim under this act it shall be the duty of the auditor to satisfy himself that it does not come under any class for which indemnity is refused by this act, and he shall require the affidavit of the claimant to this fact, or if the claimant be not cognizant thereof, then of some reputable person who is cognizant thereof, and also the certificate of the veterinarian (whose duty it shall be to inform himself fully of the facts), that in his opinion the claim is legal and just, and the auditor may at his discretion require further proof. The indemnity to be granted shall be two-thirds of the ordinary value of the animal, as determined by the appraisers, without reference to its diminished value because of being diseased. It shall be paid to the owner upon his application and the presentation of the proofs prescribed herein; and it shall be the duty of said owner to make such application within six months of the slaughter of the animal for which payment is claimed, failing which such claim shall be barred by limitation.

These payments shall be made by the Territorial treasurer, as before provided, and from the fund provided by this act.

The right to indemnity under this act is limited to animals destroyed by reason of the existence or suspected existence of some epizootic disease, generally fatal and incurable, such as rinderpest, hoof-and-mouth disease, pleuro-pneumonia, anthrax, or Texas fever, among bovines; glanders among horses, and anthrax among sheep. For the ordinary contagious diseases, not in their nature fatal, such as scab or hoof-rot in sheep, and epizootic influenzas in horses, no indemnity shall be paid.

The right to indemnity shall not exist and payment of such shall not be made in the following cases: (1) For animals belonging to the United States; (2) for animals that are brought into the Territory contrary to the provisions of this act; (3) for animals that are found to be diseased, or that are destroyed because they have been exposed to disease before or at the time of their arrival in the Territory; (4) when an animal was previously affected by any other disease which from its nature and development was incurable and necessarily fatal; (5) when the owner or person in charge shall have knowingly or negligently omitted to comply with the provisions of sections 8 and 9 of this act; (6) when the owner or claimant at the time of coming in possession of the animal knew it to be diseased or received the notice specified in the first clause of section 9 of this act.

SEC. 11. The Territorial veterinarian shall receive for his services the sum of $2,500 per annum, together with his actual necessary traveling expenses when in performance of his duty. These payments shall be made from the funds provided by this act, the salary from the appropriation for salary, and the traveling expenses from the contingent fund, upon vouchers signed and sworn to by him and approved by the governor, separate vouchers being made for salary and expenses. No person shall be competent under this act to receive the appointment of Territorial veterinarian who is not at the date of his appointment a graduate of good standing of a recognized college of veterinary surgery, either in the United States, Canada, or Europe. He shall hold his office for two years; he may be removed for cause by the governor, who shall also have power to fill a vacancy. The appraisers herein provided for shall each receive $5 for each day or part of a day they may be actually employed as such, which shall be paid from their county fund upon the certificate of the jus-

tice who summoned them. The justice shall receive his ordinary fee for issuing a summons, to be paid out of the county fund. The members of the board of health, veterinarians, physicians, or stock-owners, called in consultation by the veterinarian, shall each receive $5 for each day or part of day they may be actually so employed, and 10 cents per mile mileage for distance actually traveled, which sums shall be paid from the veterinarian's contingent fund hereafter provided. For this and other incidental expenses connected with his work and made his duty by this act, such as his traveling expenses, causing animals to be slaughtered and their carcasses burned, and disinfecting infected premises, the veterinarian shall have at his disposal the sum of $3,000, which shall be known as the veterinarian contingent fund. Before entering upon the discharge of his duties he shall give good and sufficient surety in the sum of $5,000 for the proper management of the same. He shall make a sworn statement semi-annually to the governor supported by full vouchers of the amount disbursed; any part of the $3,000 not used shall be covered into the Territorial treasury. No constructive mileage shall be paid under this act.

SEC. 12. The liability of the Territory for indemnity for animals destroyed under the provisions of this act in any two years, is limited by and shall in no case exceed the amount especially appropriated for that purpose and for that period.

SEC. 13. Hereafter it shall be the duty each year of the Territorial board of equalization at the time of making the annual assessment to levy a special tax not exceeding 1 mill on the dollar upon the assessed value of all cattle, sheep, horses, and mules in the Territory, to be known as the stock indemnity fund. Said tax shall be levied and collected by the several counties and paid to the Territorial treasurer in the manner provided by law for the levying, collection, and payment of her Territorial taxes. Said fund shall constitute the indemnity fund specified by this act to be used in paying for animals destroyed under the provisions thereof It shall be used exclusively for that purpose, and shall be paid out by the Territorial treasurer as hereinbefore provided for.

SEC. 14. This act shall take effect from and after its passage.

Approved, March 8, 1882.

WISCONSIN.

AN ACT to suppress and prevent the spread of infectious and contagious diseases among domestic animals, and to provide for the appointment of a State veterinarian.

The people of the State of Wisconsin, represented in senate and assembly, do enact as follows:

SECTION 1. The governor of the State shall appoint a competent veterinary surgeon, who shall be known as the State veterinarian, said appointment to be by and with the approval of the senate when in session, or if the senate is not in session, subject to its approval at next regular session thereafter.

SEC. 2. It shall be the duty of the State veterinarian to investigate any and all suspected contagious or infectious diseases among domestic animals in the State, of which he may have knowledge, or may be brought to his notice by any resident in the locality where such suspected disease exists, and in the absence of specific information he shall visit any locality in which he has reason to suspect the existence of such diseases. But he shall visit no locality for the purpose of carrying out the provisions of this bill, unless he be requested so to do by the State, town, city, or village board of health where the disease is supposed to exist, and he shall make an itemized account to the governor, stating the time going and returning to the place where the disease is supposed to exist, together with the necessary expenses; which itemized amount, together with his per diem, upon the approval of the governor, shall be paid by the State treasurer. He shall also make scientific study and investigation of all contagious diseases of domestic animals, and the cause, prevention, and cures thereof, and the result of his investigation and study shall be made part of his annual report, hereinafter provided, giving in plain, ordinary language the symptoms by which such diseases may be identified; how liable to be introduced and spread; the causes and conditions which may contribute to the production of any such diseases, and the sanitary or other measures best calculated to prevent the germination and spread of the same. He shall also co-operate with the State board of health in the management of all diseases which are common to men and animals, such as glanders, anthrax, and hydrophobia, or any condition of the domestic animals which is likely to affect the general health of mankind, such as render unwholesome the use of their meats or milk; and he shall make any examinations asked for by said board, and make special report to it whenever required so to do.

SEC. 3. The State veterinarian is hereby authorized, if he deem it necessary, to order quarantine of any premises upon which domestic animals are that are afflicted with contagious or infectious disease, or that are suspected to be afflicted with or that have been exposed to contagious or infectious disease, and to forbid the removal therefrom

of any animals susceptible to such disease. Said order of quarantine to be in writing and served upon the owner or occupant of the premises upon which said diseased animals are, and notice thereof posted at the usual entrance to said premises. And in case said contagious or infectious disease shall become epidemic in any locality, the State veterinarian shall immediately notify the governor, who shall thereupon issue a proclamation quarantining said locality and forbidding the removal therefrom of any animal of the kind diseased, or of any kind susceptible to such disease without permission of the State veterinarian. Any person who shall remove or allow to be removed any domestic animal of the kind diseased, or susceptible to the disease, from any premises so quarantined by the State veterinarian or locality quarantined by the proclamation of the governor, without permission of the State veterinarian, shall be guilty of a misdemeanor and be punished therefor by a fine of not less than $20 and not more than $200, or by imprisonment at hard labor not less than thirty days or more than one year, and shall forfeit all right to indemnity as herein provided, and be liable to all persons injured thereby for damages by them sustained.

SEC. 4. In case of contagious or infectious diseases of malignant or very fatal nature, such as rinderpest, foot-and-mouth disease, pleuro-pneumonia, anthrax, and Texas fever among bovines, glanders among equines, anthrax in sheep, and other diseases of like nature or fatal tendency, the State veterinarian may, if in his judgment necessary, order slaughtered any diseased animal or animals, or any animal or animals which have been exposed to such contagion or infection, but in case the State veterinarian shall have any doubt concerning the nature of such disease or the advisability of adopting such means, he shall have the right to call in consultation one or two veterinary surgeons and to confer with the State board of health. He shall also have authority to order slaughtered any animal or animals he may deem necessary for the purpose of ascertaining the nature of such disease.

SEC. 5. Whenever as herein provided the State veterinarian shall deem the slaughter of any animal or animals necessary, he shall notify in writing a justice of the peace of the county in which said diseased animals are, describing in such notice the diseased animals with reasonable certainty, and stating the name of the owner, when known, and the disease with which the animals are afflicted. The said justice of the peace shall, after entering the same upon his docket, summon three disinterested citizens of the neighborhood to act as appraisers of the value of such animals. Said appraisers shall, before entering upon the discharge of their duties, be sworn to make a true and faithful appraisement of the value of said animals without prejudice or favor. They shall, after making their appraisement, make a return to said justice of the peace; such return shall contain an accurate description of each animal, together with the appraised value thereof, and the name of the owner, when known, and be signed by the appraisers, a separate one to be made for each owner. And the justice of the peace shall, after entering the same in his docket, and making an indorsement upon each, showing it to have been properly recorded return it, together with a copy of the notice of the State veterinarian, to the owner of the animals to be slaughtered. And it shall be the duty of the State veterinarian to superintend the slaughter of such animals, the disposal of their carcasses, in a manner which to him seems best, and at all times to provide for the proper disinfecting of infected premises, within the meaning of this act. He shall cause the slaughter, disposal of carcasses, and disinfecting to be done as cheaply as practicable, and pay the expenses of the same, and be reimbursed as provided for other expenses in section 10 of this act. He shall also furnish the owner with a certificate of the slaughter, and state therein whether or not in his judgment the owner has forfeited his right to indemnity.

SEC. 6. It shall be unlawful to bring into this State any domestic animal affected with, or that has been exposed to, any infectious or contagious disease, and whenever the State veterinarian shall have reason to believe that there is danger of the introduction into this State of contagious or infectious disease among domestic animals from localities outside the State, he shall immediately investigate, and if, in his judgment, conditions exist which endanger the health of the domestic animals of this State, he shall immediately notify the governor and recommend such restrictions as he may deem necessary; and the governor shall, if in his judgment necessary, thereupon, by proclamation, designate such localities and prohibit from them the importation of any animals of the kind diseased into this State, except under such restrictions as the State veterinarian may deem proper. And any person or persons who shall knowingly bring into this State any animal affected with or that has been exposed to any contagious or infectious disease, or any person or persons who shall, after the issuing of the governor's proclamation, herein provided, receive in charge any animal or animals from any one of said designated localities, and transport or convey the same within the State, shall be deemed guilty of a misdemeanor, and punished therefor by a fine of not less than $200 and not more than $2,000, or by imprisonment at hard labor not less than six months nor more than two years in the county jail, and forfeit all right to indemnity, as herein provided, and be liable to all persons in-

jured thereby for damages by them sustained. Any corporation violating any of the provisions of this section shall forfeit not less than $200 or more than $2,000, and be liable to all persons injured thereby for damages by them sustained.

SEC. 7. It shall be the duty of any person, or the agent of any corporation who shall have reason to suspect that there is upon their premises any animal or animals affected with contagious or infectious disease, to immediately report the same to the State veterinarian, or some members of the State or of some local board of health, whose duty it shall be to report the same to the State veterinarian, and failure to so report, or any attempt to conceal the existence of such disease, or to obstruct or resist the State veterinarian in the performance of his duty as herein set forth, or to sell, offer for sale, give away, or in any manner part with any animal affected with or suspected to be affected with, or that has been exposed to any contagious or infectious disease, and any person convicted of any of the above acts or omissions shall be fined not less than $20 and not more than $200, or be imprisoned at hard labor not less than thirty days or more than one year for each offense, and shall forfeit all right to indemnity, as herein provided, and be liable to all persons injured thereby for damages by them sustained. The provisions of this act shall apply to all animals in this State, whether resident or in transit, and the State veterinarian is thereby authorized to enter any premises where he has reason to suspect diseased animals are confined, and he may call to his aid, when necessary, the sheriff or any constable of the county in which the diseased or infected animals are; and it is hereby made the duty of such officers to assist the State veterinarian to enforce the provisions of this act when called upon so to do.

SEC. 8. All claims against the State arising from the slaughter of animals, as herein provided, shall be made by filing with the secretary of state a copy of the State veterinarian's notice to the justice of the peace and return of the appraisers, which notice and return shall be certified to by the justice of the peace, on whose docket they are recorded, and the certificate of the slaughter of the animals signed by the State veterinarian. The secretary of state shall examine the same without delay, and for each one found equitable and entitled to indemnity he shall issue a warrant upon the State treasurer for two-thirds the sum of money named in the appraiser's return, to be paid out of an appropriation provided for by this act.

SEC. 9. The right to indemnity shall not exist and payments shall not be made in the following case: (1) For animals belonging to the United States, this State, or any city, county, township, or village in the State; (2) for animals that have been brought into the State contrary to the provisions of section 6, or where the owner or claimant shall have failed to comply with the provisions of sections 3 and 7 of this act; (3) when the owner or claimant at the time of coming into possession of the animal knew it to be diseased; (4) for animals found to have been diseased at the time of their arrival in the State.

SEC. 10. The state veterinarian shall receive for his services the sum of $7 per diem, together with his necessary expenses, when performing his duties, and his appointment shall be for a term of two years. The veterinary surgeons called in consultation shall receive the sum of $7 per day for each day actually employed and their necessary expenses while performing their duties. These payments shall be made by the State treasurer from an appropriation provided by this act upon itemized vouchers approved by the governor. And no person shall be considered a veterinary surgeon within the meaning of this act who is not a regular graduate in good standing of some recognized veterinary college in the United States, Canada, or Europe. The appraisers herein provided shall receive the sum of $2 for each day actually employed as such, to be paid out of the county funds upon certificate of the justice of the peace by whom they were summoned. The justice of the peace, sheriff, and constable shall receive their fees from their respective counties as provided by law in criminal cases.

SEC. 11. The State veterinarian shall in October of each year make a report to the governor of the State.

SEC. 12. There is hereby annually appropriated from any moneys in the treasury not otherwise appropriated a sum sufficient to carry out the provisions of this act.

SEC. 13. All acts or parts of acts inconsistent herewith are hereby repealed.

SEC. 14. This act shall take effect and be in force from and after its passage and publication.

Approved, April 13, 1885.

QUARANTINE PROCLAMATIONS.

ILLINOIS.

STATE OF ILLINOIS, EXECUTIVE DEPARTMENT, *Springfield, April* 25, 1885.

Whereas in pursuance of an act of the general assembly of Illinois entitled "An act to suppress and prevent the spread of pleuro-pneumonia among cattle," approved May 31, 1881, the State veterinarian has, in compliance with the requirements of the second section of said act, officially notified the governor of the State that the contagious disease of pleuro-pneumonia among cattle has become epidemic in the State of Missouri:

Now, therefore, I, Richard J. Oglesby, governor of the State of Illinois, as required by section 4 of the said above-entitled act, do hereby make proclamation of the foregoing facts, and hereby schedule the State of Missouri, and forbid any animals of the kind among which said epidemic exists being transported from said State into the State of Illinois without an official certificate from a recognized competent veterinary authority, showing such animals to be healthy and free from such contagious diseases, and that the same have not been exposed to such disease for the period of 100 days next preceding the removal of such cattle from said State. All railroad or transportation companies that may be engaged in the transportation of cattle from said State, and who shall transport any cattle from said State, are hereby prohibited from shipping or transporting from such State into the State of Illinois any cattle, unless before shipping the same from the State of Missouri, they shall receive from the duly recognized veterinarian authority in the State of Missouri a certificate showing that the cattle shipped or transported are in healthy condition and have not been exposed to such diseases for the period of 100 days next preceding the removal of such cattle from said State. Any corporation or individual who shall transport, receive, or convey such prohibited stock shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be fined not less than $1,000 nor more than $10,000 for each and every offense, and shall be liable for any and all damages or losses that may be sustained by any party or parties by reason of the importation or transportation of such prohibited stock. (Section 4 of act aproved May 31, 1881.) All persons or corporations in this State owning or having possession of cattle infected with, or that may have been exposed to, pleuro-pneumonia, are hereby enjoined to immediately report all supposed cases of pleuro-pneumonia to the State veterinarian at Springfield, Ill. Any person or persons who shall fail to make such report, or shall obstruct or resist the State veterinarian in the discharge of his duties as specified by law, shall be deemed guilty of a misdemeanor, and, upon conviction of either charge, shall be fined not less than $50 nor more than $500 for each and every offense, and upon conviction a second time shall, in addition to the above-named fine, be liable to not less than thirty days, nor more than six months' imprisonment. All sheriffs, constables, police, and other civil officers are hereby called upon and directed to aid the State veterinarian and his assistants in enforcing the law. This proclamation to go into effect Monday, April 29, 1885.

In testimony whereof I hereto set my hand and cause the great seal of the State to be affixed.

Done at the city of Springfield, the day and year above written.

R. J. OGLESBY.

By the governor:

H. D. DEMENT,
Secretary of State.

REPORT OF ILLINOIS LIVE-STOCK COMMISSION.

In September last the live-stock commission of Illinois held a meeting for the consideration of infectious and contagious animal diseases, which resulted in the following communication addressed to the governor:

OFFICE OF THE LIVE-STOCK COMMISSION, *Springfield, September* 1, 1885.

To his excellency the governor:

We beg leave to report that we have received reliable information to the effect that the disease known as the contagious pleuro-pneumonia among cattle now exists and is epidemic in the following localities, viz: The counties of New York, Richmond, Kings, and Queens in the State of New York; the counties of Bergen, Passaic, Essex, Union, Hunterdon, Camden, Burlington, Hudson, and Middlesex in the State of New Jersey; the county of New Castle in Delaware; the counties of Baltimore and Prince George's in the State of Maryland; the county of Fairfax in Virginia; the county of Harrison in

Kentucky; the county of Montgomery in Ohio; the county of Madison in Tennessee, and the District of Columbia. We therefore recommend that you issue your proclamation scheduling such infected localities absolutely prohibiting the importation of cattle from such infected localities into the State of Illinois according to the law entitled "An act to revise the law in relation to the suppression of contagious and infectious diseases among domestic animals." We also believe that the conditions are such as to render cattle from any other part of the infected States of New Jersey, Delaware, Maryland, Virginia, Kentucky, Ohio, Tennessee, and that portion of the State of Pennsylvania east of the Alleghany Mountains, and that part of the State of New York south of the Mohawk River and east of the Chenango River, liable to convey such disease. We, therefore, recommend that you prohibit the transportation of cattle from such States and localities, unless accompanied by an affidavit from the shipper of such cattle to the effect that they have not been exposed to the disease known as contagious pleuro-pneumonia among cattle; also a certificate from the county clerk of the county from whence such cattle were shipped stating that he knows the affiant to be a responsible and reliable man; also a health certificate from a veterinarian acting under State authority, or a veterinarian inspector acting under the authority of the United States Bureau of Animal Industry, certifying to the present healthy condition of such cattle, and that no contagious pleuro-pneumonia among cattle exists or has within four months existed in the county or adjoining counties from whence the cattle are shipped.

In view of the great loss and damage which in past years have been sustained by citizens of this State by reason of splenic or Texas fever, which, according to the best information obtainable, is transmitted to our native cattle only by cattle coming from the country south of the thirty-sixth parallel of latitude, between the periods of spring and autumn frosts, we recommend that you forbid the importation into this State of cattle from beyond the line named between the 1st day of April and the last day of November of each year, except in cases where such cattle may be in transit through this State and are unloaded only for feed and water, or where they are intended for immediate slaughter in this State.

JOHN M. PEARSON,
HIRAM McCHESNEY,
Live-Stock Commissioners.

Mr. Commissioner Smith dissents in part from the views of the majority of the commissioners in the following:

"In view of the great extent of the traffic in cattle between this State and the State of Missouri, I am reluctant to recommend any restrictions upon that traffic which are not absolutely required by the necessities of the case. But the conditions in that State are such that I cannot at present consent to the entire removal of restrictions from the infected county of Callaway and the adjoining counties of Audrain, Montgomery, Orange, Cole, and Boone. I therefore respectfully dissent from my colleagues so far as these counties in the State of Missouri are concerned, but join with them in the other recommendations above.

I would further respectfully recommend to your excellency that in issuing your proclamation, scheduling infected districts, you announce that whenever satisfactory evidence is submitted to you of the fact that any State named therein is entirely free from contagious pleuro-pneumonia, that you will immediately remove your restrictions from such State.

Very respectfully,

D. W. SMITH,
Live-Stock Commissioner.

PROCLAMATION.

STATE OF ILLINOIS, EXECUTIVE DEPARTMENT, *Springfield, Ill., October* 17, 1885.

Whereas, in pursuance of an act of the general assembly of Illinois, entitled "An act to revise the law in relation to the suppression and prevention of the spread of contagious and infectious diseases among domestic animals," approved June 27, 1885, in force July 1, 1885, the board of live-stock commissioners of Illinois, reported to me under date of October 14, 1885, that the disease known as contagious pleuro-pneumonia among cattle now exists and is epidemic in the following localities, viz: The counties of New York, Richmond, Kings, and Queens in the State of New York; the counties of Bergen, Passaic, Essex, Union, Hunterdon, Camden, Burlington, Hudson, and Middlesex in the State of New Jersey; the counties of Baltimore and Prince George's in the State of Maryland; the counties of Fairfax and Loudoun in the State of Virginia; the counties of Harrison and Pendleton in the State of Kentucky; the county of New Castle in Delaware; the county of Jefferson in West Virginia, and the District of Columbia; and,

Whereas the said live-stock commissioners have recommended that I issue proclamation, according to the terms of the above-entitled act, scheduling such infected localities and prohibiting the importation of cattle from such infected localities into the State of Illinois, except in accordance with the regulations adopted by said board of live-stock commissioners and approved by the governor, which regulations are herewith submitted and made a part of this proclamation; now, therefore,

I, Richard J. Oglesby, governor of the State of Illinois, as provided by section 4 of said above-entitled act, do hereby make proclamation of the foregoing facts, and schedule the above-designated localities, and prohibit the importation of any live stock of the kind diseased being transported from the above-mentioned localities into the State of Illinois, except under the regulations hereto attached that have been prescribed by the said board of live-stock commissioners and approved by the governor, as follows:

"REGULATIONS adopted by the State board of live-stock commissioners of Illinois, October 14, 1885, to be observed and followed in all cases, when proclamation may be made by the governor, prohibiting the introduction of live stock into this State from localities in other States and provinces.

"These regulations are made in accordance with requirements of section 4 of an act entitled, 'An act to revise the law in relation to the suppression and prevention of the spread of contagious and infectious diseases among domestic animals,' approved June 27, 1885.

"1. The shipper or owner of cattle from such infected localities shall make and present to the proper officer a duly authenticated affidavit that the animal or animals shipped from such infected locality are healthy and free from such disease; that such animal or animals have not been in contact with other animals actually infected with such disease, and have not been exposed to such disease in such infected locality; that affiant knows the history of such animal or animals for the period of one hundred days before shipment, and that said animal or animals have not for said one hundred days been exposed to any infectious disease, and also stating where such animals have been kept during the said one hundred days.

"2. Such person shall, at the same time, present a duly authenticated certificate from an officer of a court of record where said affiant resides, that affiant is a responsible person, entitled to credibility, and personally known to said officer, attested by the seal of his office.

"3. He shall also present a health certificate from a veterinarian acting under State authority, or a veterinary inspector, acting under authority of the United States Bureau of Animal Industry, certifying to the present healthy condition of such cattle.

"4. All cattle, or other live stock, shipped or driven into this State from such infected localities shall be subject to such inspection and examination within this State, or may be held in quarantine within this State, as may be from time to time thought necessary for public safety by said live-stock commission.

"Any corporation which shall knowingly transport, receive, or convey such prohibited stock, shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be fined not less than $1,000 nor more than $10,000 for each and every offense, and shall become liable for any and all damage or loss that may be sustained by any party or parties, by reason of the importation or transportation of such prohibited stock." (Session laws of Illinois, 1885, p. 2.)

This proclamation to go into effect Tuesday, October 20, A. D. 1885.

In testimony whereof I hereto set my hand and cause the great seal of State to be affixed. Done at the city of Springfield, the day and year first above written.

RICHARD J. OGLESBY.

By the governor:

HENRY D. DEMENT,
Secretary of State.

INDIANA.

PROCLAMATION BY THE GOVERNOR.

Whereas the Indiana Shorthorn Breeders' Association and numerous citizens of the State, have represented to me that a certain contagious and infectious disease, known as pleuro-pneumonia, and other diseases, now exist among the cattle of the States of Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, West Virginia, Ohio, Illinois, Kentucky, Tennessee, Missouri, and the District of Columbia, and thereby causing great fear among the cattle breeders of this State that the germ of such disease will be brought from such infected districts into this State; and

Whereas it is so further represented that diseased cattle will likely be shipped from infected localities to points within the limits of the State of Indiana, and after re-

maining at such points for a short period will be shipped to other points without this State, as cattle coming from the State of Indiana; and

Whereas such infections and contagions are not known to exist among the cattle now in this State; and

Whereas said association and citizens have requested me to issue a proclamation, scheduling such infected localities, and prohibiting the importation into this State from such scheduled localities, any live stock diseased, and thereby protect the great and growing cattle interest of this State; and

Whereas it is proper that injustice should not be done to those persons whose stock are not diseased, by delay in the transportation of their cattle, except to conform to certain reasonable regulations to protect the public interest in this State;

Now, therefore, I, Isaac P. Gray, governor of the State of Indiana, do hereby issue this proclamation, hereby warning any and all persons, corporations, and companies against bringing cattle into this State, and hereby prohibiting the importation into this State of cattle from any of the above-named States, except on the conditions and under the restrictions as follows:

RULE 1. The shipper or owner of cattle from such infected States shall, before importing into this State any cattle for the purpose of delivery, sale or offering for sale, or being kept within this State, forward to the secretary of the State board of health, at Indianapolis, his affidavit, duly subscribed and sworn to before the clerk of the court of the county from whence such cattle are shipped, that the cattle shipped from such infected locality are healthy and free from such infectious disease; that such cattle have not been in contact with other cattle infected with such disease, and have not been exposed to such disease; that affiant knows the history of such cattle for the period of ninety days before shipment; that said cattle have not for said period of time been exposed to said disease, and also stating where such cattle have been kept for said period of ninety days, and to what place or places within this State said cattle are to be shipped.

RULE 2. Such shipper or owner shall, at the same time, forward to the secretary of the State board of health a duly authenticated certificate from the clerk of the court from where such cattle are shipped, or from the clerk of the court of the county where the owner or shipper resides; that the affiant is a reputable person, entitled to credit, and personally known to said clerk of said court, which certificate shall have affixed thereto the seal of his office.

RULE 3. Said shipper or owner shall also, at the same time, forward to the secretary of the State board of health a duly authenticated certificate from a veterinary inspector, acting under State authority, or other proper authority, certifying to the then present healthy condition of such cattle.

RULE 4. The shipper or owner of said cattle shall, before unloading, or delivering, or selling, or offering for sale such cattle in this State cause the same to be inspected by a competent veterinary inspector of this State, to be selected or recommended by the secretary of the county board of health, certifying to the present healthy condition of said cattle, which certificate the secretary of the county board of health shall forward to the secretary of the State board of health.

In witness whereof I have hereunto set my hand and caused the seal of the State to be affixed, at the city of Indianapolis, Ind., this 10th day of November, A. D. 1885.

ISAAC P. GRAY.

By the governor:

WILLIAM R. MYERS,
Secretary of State.

KANSAS.

STATE OF KANSAS, EXECUTIVE DEPARTMENT, *Topeka, April* 28, 1885.

Whereas on the 15th day of April, A. D., 1885, a proclamation was issued by the executive of the State of Kansas, establishing a quarantine against the introduction into the State of all animals of the bovine species coming from the following-named places, to-wit: All of the State of Connecticut, all of that portion of New York lying south of the north line of the State of Connecticut, all of Pennsylvania, New Jersey, Delaware, Maryland, District of Columbia, Virginia, West Virginia, Ohio, Illinois, Kentucky, Tennessee, and the counties of Callaway, Boone, Audrain, and Montgomery, in the State of Missouri, unless all such cattle are quarantined at the point or locality of introduction into the State for a period of ninety days, and retained there until they shall receive a certificate of health, signed by the State veterinarian of Kansas; and

Whereas the authorities of the State of Missouri have, since the date of the proclamation aforesaid, adopted no adequate measures for stamping out said disease, and there is serious danger that it may spread to other counties; and

Whereas the live-stock sanitary commission of the State of Kansas has recommended the establishment of a quarantine against the introduction of all animals of the bovine species coming from any part of the State of Missouri;

Now, therefore, I, John A. Martin, governor of Kansas, do hereby, in accordance with authority vested in me by the laws of Kansas, declare and establish a quarantine against the introduction of all animals of the bovine species from the State of Missouri, unless all such cattle are quarantined at the point of introduction for a period of ninety days, and retained there until they shall receive a certificate of health signed by the State veterinarian of Kansas, and further, that all cattle coming into Kansas from the above-named localities be required to enter the State at Atchison, Leavenworth, Kansas City, or Fort Scott.

The live-stock sanitary commission and the State veterinarian are directed to see that the quarantine thus ordered and established is enforced.

In testimony whereof I have hereunto subscribed my name, and caused to be affixed the great seal of the State. Done at Topeka the 28th day of April, A. D., 1885, and of the independence of the United States the one hundred and ninth, and of the State the twenty-fifth year.

JOHN A. MARTIN,
Governor.

At a meeting of the live-stock sanitary board of Kansas, held at Topeka, Kans., on Saturday, May 9, 1885, the following rules for the admission of cattle from quarantined States were adopted:

"Whereas the governor of Kansas did, by proclamation, on the 15th day of April, 1885, declare and establish a quarantine against the introduction of all animals of the bovine species from the following-named places, to-wit, all of the State of Connecticut, all that portion of New York lying south of the north line of the State of Connecticut, all of Pennsylvania, New Jersey, Delaware, Maryland, District of Columbia, Virginia, West Virginia, Ohio, Illinois, Kentucky, Tennessee, and the counties of Callaway, Boone, Audrain, and Montgomery in the State of Missouri; and did on April 28, 1885, by further proclamation, extend said quarantine so as to include the whole State of Missouri, unless all such cattle coming from the above-named localities are quarantined at the point of introduction for a period of ninety days, and retained there until they shall receive a certificate of health signed by the State veterinarian of Kansas; and further, that all cattle coming into Kansas from the above-named localities be required to enter the State at Atchison, Leavenworth, Kansas City, or Fort Scott:

"Now, therefore, we, the live-stock sanitary commission of the State of Kansas, do hereby promulgate the following rules and regulations governing quarantine and admission of cattle into Kansas from the above-named localities, to-wit:

"1. All cattle coming into this State from localities quarantined against will be required to furnish the following evidences that they are free from disease: (*a*) certificate of health signed by the State veterinarian of the State from which they came, or by a veterinary inspector of the Bureau of Animal Industry, or, in States where neither of these offices exist, by a veterinary inspector named by the governor of the said State; (*b*) affidavit of ten disinterested parties that they have known the cattle in question for a period of four months prior to the date of shipment; that they have been healthy and exposed to no contagious disease, and that no contagious disease is known or believed to exist in the county from which they come; (*c*) certificate of county clerk of said county that parties making such affidavit are responsible and reputable citizens of the county; (*d*) affidavit of owner, made at point of entry, that his cattle are the identical cattle described in the foregoing affidavits and certificates, and that shipment has been direct and without unloading, except for feed and water, and in cleansed and disinfected cars; (*e*) affidavit of owner that the cattle will be kept separate and apart from all cattle belonging to other parties for a period of ninety days; (*f*) all the foregoing to be submitted at the point of entry to the live-stock sanitary commission, the State veterinarian, or an authorized inspector of the State, when permit for shipment may be issued; (*g*) on all cattle inspected and receiving permits for shipment a fee of 50 cents a head will be charged; (*h*) no railway company doing business in this State will receive for shipment into the State any cattle coming from the quarantined localities unless accompanied by the aforesaid permit.

"2. Cattle not receiving permits and placed in quarantine in accordance with the governor's proclamation will be held at the expense of the owner, subject to such rules and regulations as the commission may prescribe.

"3. Chapter 11, section 21, special session laws of 1884, 'except as otherwise provided in this act, any person who shall violate, disregard, or evade, or attempt to violate, disregard, or evade any of the rules, regulations, orders, or directions of the live-stock sanitary commission establishing and governing quarantine, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined in any sum not less than $100 nor more than $5,000.'"

By order of the live-stock sanitary commission:

A. A. HOLCOMBE, *Secretary.*

MONTANA.

The following is the text of the quarantine proclamation of the governor of Montana issued in May, 1885:

"Whereas by virtue of and pursuant to an act of the legislative assembly of the Territory of Montana, entitled 'An act to suppress and prevent the dissemination of contagious and infectious diseases among domestic animals and Texas cattle,' approved March 10, A. D., 1885, it is my duty, when I shall have reason to believe that any contagious or infectious disease has become epidemic in certain localities, or that conditions exist which render domestic animals and Texas cattle liable to convey disease, by proclamation to schedule such localities, and prohibit the importation from them of any live stock of the kind diseased into this Territory, except under such restrictions as I, after consultation with the Territorial veterinary surgeon, may deem proper; and

"Whereas I have reason to believe that conditions exist which render domestic animals and Texas cattle in any and all of the counties of the following-named States and Territories, viz: Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Maryland, Delaware, District of Columbia, Virginia, West Virginia, Kentucky, Tennessee, Texas, Arkansas, Missouri, Illinois, and Indian Territory, liable to convey disease; and

"Whereas such conditions are caused by the existence of pleuro-pneumonia and splenic or Texas fever in many such localities; and

"Whereas neat cattle which have been exposed to pleuro-pneumonia may have the same in its incipient stages, and no diagnosis thereof will answer with certainty whether the animal is thus afflicted or not, and in such cases ninety days must elapse before a veterinarian can certify to the healthfulness of such animals; and

"Whereas many neat cattle so infected or exposed are owned or held in large numbers in the country east of the Missouri River, and it appears to me to be the purpose of the owners of many of them to bring said cattle into this Territory, and thus enable them to come into contact with the range cattle of this Territory, thereby endangering the property of the citizens of this Territory; and

"Whereas when Texas cattle are driven north, consuming three or four months on the trail, the change of feed and the lapse of time induces such a change in the system of the animal that they no longer contain a virus spreading disease; and

"Whereas experience has shown that cattle afflicted with splenic or Texas fever, if brought into this Territory in whole or in part by rail, bring with them the germs of this disease, and transmit it to the native herds with which they come in contact, and when thus transmitted said disease becomes fatal to our native cattle;

"Now, therefore, I, John S. Tooker, acting governor of the Territory of Montana, by virtue of the authority conferred upon me by said statute and pursuant to the terms thereof, do hereby schedule the localities hereinbefore named, and I do hereby strictly forbid the importation into this Territory of any cattle whatsoever, which have been brought from or through any portion of said scheduled localities, or any one of them, except upon certificate of the Territorial veterinary surgeon that such cattle are not diseased.

"And I do hereby further forbid the importation into this Territory prior to November 1, A. D., 1885, of any cattle brought in whole or in part by rail from the State of Texas.

"And I do hereby further forbid the importation into this Territory of any and all cattle driven or shipped from any other State, Territory, or country, unless the same shall be accompanied by a certificate of health given by the Territorial veterinary surgeon, or his regularly appointed or authorized deputy, who shall have carefully examined all such cattle immediately prior to the giving of such certificate. And all such cattle shall be examined at such station upon a line of railroad leading into the Territory of Montana as shall be designated by said veterinary surgeon.

"And I do hereby warn all persons, corporations, and companies whomsoever, not in any manner to violate or attempt to violate the prohibition herein contained, or contained in said act.

"And I do hereby direct all sheriffs, constables, and other peace officers within this Territory, to keep strict watch, and to be vigilant and see to it that all the commands of this, my proclamation, are obeyed and respected, and to arrest any and all persons offering the slightest violation of the same; and I further direct all such officers to report to me without delay all such violations of this proclamation."

NEBRASKA.

Whereas the live-stock sanitary commission of the State of Nebraska, at a meeting of said commission held at Lincoln, Nebr., on the 16th day of July, A. D., 1885, adopted the following preamble and resolution:

"Whereas it has come to the knowledge of the live-stock sanitary commission of the

State of Nebraska, that contagious pleuro-pneumonia and other contagious diseases exist among the cattle of the following-named States, viz: All of the State of Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, West Virginia, Ohio, Illinois, Kentucky, Tennessee, Missouri and the District of Columbia; therefore, be it,

"*Resolved*, That his excellency, Governor James W. Dawes, be, and hereby is, respectfully requested to issue a proclamation prohibiting the importation into this State of all cattle from the above-named places, excepting under such rules and regulations as shall be prescribed by the live-stock sanitary commission of this State."

Now, therefore, I, James W. Dawes, governor of the State of Nebraska, complying with the above request, and inaccordance with the authority in me vested by the statutes of Nebraska, do hereby issue my proclamation, declaring and establishing quarantine against the introduction of all cattle from all or any of the States above named, unless such cattle are quarantined at the point of entry into this State for at least ten days, and retained there until they shall receive a certificate of health signed by the State veterinarian of Nebraska, or an authorized inspector of the State: *And further*, That all cattle coming into Nebraska from said above-named States are required to enter the State at Omaha, Plattsmouth, Blair, or Falls City. The quarantine, so declared and established will be enforced by the live-stock sanitary commission and the State veterinarian.

OHIO.

EXECUTIVE DEPARTMENT, OFFICE OF THE GOVERNOR,
Columbus; Ohio, October 24, 1885.

To the people of the State of Ohio:

At the request of the board of live-stock commissioners, and for the purpose of endeavoring to guard against the danger of infection to cattle in Ohio by the importation of diseased cattle from other States, I hereby give notice that the following rules and regulations governing the quarantine and admission of cattle into the State of Ohio have been adopted by the board of live-stock commissioners of Ohio, in the enforcement of which rules and regulations all good citizens are requested to assist:

RULES AND REGULATIONS GOVERNING QUARANTINE AND THE ADMISSION OF CATTLE INTO THE STATE OF OHIO.

The board of live-stock commissioners of the State of Ohio, believing it necessary for the protection of the live stock of this State, by virtue of the act to suppress and prevent the dissemination of contagious diseases among domestic animals, do hereby order and prescribe the following rules and regulations to govern the admission of cattle into this State from such States and localities as may be declared infected and quarantined against.

1. In case of cattle brought into this State from localities quarantined against, the following evidence shall be required, showing that they are free from disease:

(*a*) Certificate of health signed by the State veterinarian of the State from which they come, or by a veterinary inspector of the Bureau of Animal Industry, or in such States where neither of these officers exist, by a veterinary inspector named by the governor of said State.

(*b*) Affidavit of two disinterested parties that they have known the cattle in question for a period of four months prior to the date of shipment, that they have been healthy and exposed to no contagious disease, and that no contagious disease is known or believed to exist in the country from which they come.

(*c*) Certificates of the county clerk or a judge of a court of record of said county, that parties making such affidavit are known to him as responsible and reputable citizens of the country.

(*d*) Affidavit of the owner or person in charge at point of delivery or unloading in this State, that said cattle are the identical cattle described in the foregoing affidavits and certificates, that shipment has been direct and in cleansed and disinfected cars and without unloading, except for feed and water, and that said evidences shall be immediately transmitted to T. P. Shields, secretary live-stock commission, Watkins, Ohio.

2. No railway company doing business in this State shall transport into the State any cattle coming from infected or quarantined localities unless accompanied by the aforesaid evidences of healthy condition.

3. Cattle shipped into the State without the above evidences of health will be held in quarantine at the expense of the owner, subject to such rules and regulations as the live-stock commissioners may prescribe.

4. All railway companies (doing business in this State) transporting cattle from Texas and the Gulf States from the 1st of May to the 1st of November, are prohib-

ited from unloading such cattle in this State, unless they provide separate yards for the same, which yards are not to be used for the accommodation of other cattle until they have been thoroughly cleansed and disinfected. And if any such Texas or Gulf State cattle shall be brought into the State between the periods above specified, that have been wintered south of the States of Missouri and Kansas, otherwise than in transit through the State, they will be subject to quarantine at the expense of the owner to prevent the spread of Texas or splenic fever; and all railway cars in which such cattle may have been carried, must be thoroughly cleansed and disinfected before being used for the transportation of other cattle.

THOS. P. SHIELDS,
T. C. JONES,
B. W. CARLISLE,
Commissioners.

COLUMBUS, OHIO, *October* 23, 1885.

Given under my hand and the great seal of the State of Ohio, the 24th day of October, in the year of our Lord 1885, and in the 110th year of the independence of the United States of America.

[SEAL.]

GEO. HOADLY,
Governor.

By the governor:

J. L. ROBINSON,
Secretary of State.

WYOMING.

Whereas, by virtue of, and pursuant to, the act of the legislative assembly of the Territory of Wyoming, entitled "An act to suppress and prevent the dissemination of contagious and infectious diseases among domestic animals," approved March 8, 1882, it is my duty, when I shall have good reason to believe that any contagious or infectious disease has become epidemic in certain localities, or that conditions exist which render domestic animals liable to convey disease, by proclamation to schedule such localities, and to prohibit the importation from them of any live stock into this Territory, except under such restrictions as I may deem proper; and

Whereas, a certain contagious or infectious disease called pleuro-pneumonia, has become epidemic in certain localities, to-wit: In the counties of Putnam, Westchester, New York, Kings, Richmond, and Queens in the State of New York; in the counties of Bucks, Montgomery, Philadelphia, Delaware, Chester, and Lancaster in the State of Pennsylvania; in the counties of Bergen, Hudson, Morris, Essex, Union, Somerset, Hunterdon, Middlesex, Mercer, Monmouth, Ocean, Burlington, Camden, Gloucester, Passaic, and Atlantic in the State of New Jersey; in the county of Newcastle in the State of Delaware; and in the counties of Cecil, Harford, Baltimore, Howard, and Carroll in the State of Maryland; in the counties of Miami and Montgomery in the State of Ohio; in the District of Columbia; in the counties of Cass, Kane, Du Page, Peoria, Whitesides, Morgan, and Schuyler in the State of Illinois; in the county of Fairfax in the State of Virginia; in the counties of Callaway, Boone, Cole, Audrain, Montgomery, and Osage in the State of Missouri; in the county of Harrison in the State of Kentucky; and in the county of Travis in the State of Texas; and

Whereas there are certain localities in the State of Texas, wherein a certain other contagious or infectious disease called splenic or Texas fever exists, and in said localities is epidemic, and the owners of neat cattle in said districts are permitted to, and are in constant practice of driving their said cattle that are thus diseased into the northern counties of said State, and thence shipping them to other localities, particularly to this Territory, representing them as coming from said uninfected districts, whereby the property of the citizens of this Territory is endangered; and

Whereas experience hath shown that cattle afflicted with Splenic or Texas fever, if brought to this Territory either in whole or in part by rail, bring with them the germs of this disease and transmit them to native herds with which they come in contact, and when thus transmitted the disease proves fatal to our native cattle; and

Whereas if said contagious or infectious diseases, or either of them, should become disseminated among the domestic animals of this Territory, the same would be dangerous to the property of the citizens of this Territory, and therefore all domestic animals coming into this Territory with said diseases, or either of them, or that may have been exposed thereto, would also prove dangerous to the property of the citizens of this Territory:

Now, therefore, by virtue of the premises aforesaid, and pursuant to said statute, I, Francis E. Warren, governor of the Territory of Wyoming, do hereby schedule the localities first hereinbefore specified, that is to say, said counties in the States of New York, Pennsylvania, New Jersey, Delaware, Maryland, Ohio, Missouri, Illinois, Vir-

ginia, Texas, Kentucky, and in the District of Columbia; and I do hereby proclaim that in said localities and each thereof, a certain contagious and infectious disease, to-wit, pleuro-pneumonia, exists in an epidemic form, and I do hereby strictly forbid, as by said statute it is my duty to do, the importation into this Territory of any neat cattle that have been brought from or through any portion of said scheduled localities, or any one of them.

And by virtue of the premises aforesaid, I do hereby forbid, as by said statute it is my duty to do, the importation into this Territory, prior to November 1, 1885, of any neat cattle that have been or may be brought in whole or in part by rail from the State of Texas; and

Whereas neat cattle from said infected districts have been, at divers times since the discovery of the existence of said disease therein, sold and transported to other sections, without any regard paid to said disease or the exposure of such cattle thereto, very many of which are now held and owned by persons whose intention it is to transport the same into or through this Territory, and by reason of such unrestricted traffic it is impossible to determine, with certainty, the gravity of the situation demands, without the aid of such owners or persons in charge, whether the said cattle thus intended for Wyoming or for transportation through said Territory, came from or through any of said scheduled localities or not, or whether they, or any of them, have been exposed to said disease or not, either in said localities or in others not herein specified; and

Whereas neat cattle may have been exposed to said disease and may have the same in its incipient stages, and no diagnosis thereof will answer with certainty whether the animal is thus afflicted or not, and in all cases at least ninety days must elapse before a veterinarian can certify intelligently to the healthfulness of said animals; and

Whereas if any such neat cattle thus diseased, or that have been exposed thereto, should be permitted to enter this Territory, and should thereby come into contact with the cattle of this Territory, the property of the citizens of this Territory would be greatly endangered; and

Whereas very many of said neat cattle that have or may have been exposed have been and are now being taken to the various shipping stations lying east of the Missouri River, and which have rail connection with this Territory, with the intent of transporting the same into or through this Territory, and inasmuch as it is practically impossible to guard our Territorial lines from being crossed by any or all of such cattle if they be driven:

Now, therefore, by virtue of the premises aforesaid, and pursuant to said statute, I, Francis E. Warren, governor of the Territory of Wyoming, do hereby forbid the importation into or transportation through this Territory of any cattle that have been brought from any place lying east of the ninety-sixth degree of longitude west, except only on the conditions and under the restrictions following, that is to say:

(1) That said cattle shall only be brought by rail, and shall first be unloaded in Wyoming at the Territorial quarantine yards located at Cheyenne.

(2) That upon their arrival they shall be inspected by the Territorial veterinarian, and if found on inspection to be free from any symptoms of any contagious or infectious disease, then in that case, it shall be the duty of the owner or person in charge of said cattle to reasonably establish the following facts in relation thereto, namely:

That said cattle did not come from or through any of said scheduled localities, and that none of said cattle have been exposed to said disease within four months next preceding their shipment.

(3) Upon the truth of each of the foregoing facts being made manifest to said veterinarian he shall give to said cattle a certificate, reciting the facts thus proven, and, also, of his examination thereof, together with a careful description of said cattle; whereupon said cattle shall have the freedom of this Territory, and not before, and until such certificate shall be given them, they shall be held in said quarantine yards until such time as the veterinarian shall be satisfied by lapse of time of their freedom from disease, such period of detention to be not longer than ninety days next ensuing their arrival, and if after the expiration of such time they shall not show any symptoms of any infectious or contagious disease, they shall then be allowed the freedom of the Territory.

(4) During the time cattle shall remain in said yards they shall be subject to the rules and regulations then in force concerning cattle held in quarantine, and shall be properly attended to at the expense of the owner thereof.

And I hereby warn all persons and corporations whomsover not to in any way violate or attempt to violate in any way, the prohibitions herein contained, else they shall incur the severe penalties and punishments in said act provided therefor; and to that end, and that this proclamation shall be in all things strictly enforced, I hereby call upon all sheriffs and other officers of this Territory, to give to this proclamation and to its rigid enforcement their active and zealous aid; and further, I respectfully request all persons to report to me any cattle that are now or that may

hereafter be on their way to this Territory, and in all other ways in their power to aid in the enforcement of the injunction and commands herein contained.

All former proclamations of quarantine are hereby revoked.

In testimony whereof I have hereunto set my hand and caused the great seal of said Territory to be hereunto affixed.

Done at Cheyenne, this 7th day of August, A. D., 1885.

FRANCIS E. WARREN.

RULES AND REGULATIONS GOVERNING QUARANTINE AND THE ADMISSION OF CATTLE INTO WYOMING TERRITORY.

[Extract from chapter 41, laws of 1882.]

SECTION 2. The duties of said veterinarian shall be as follows: * * * And to inspect under the regulations of this act all domestic animals that may arrive at any railroad station in this Territory; * * * and it shall be the duty of the owner, or in his absence, of the person in charge of such animals so arriving, to notify the Territorial veterinarian without delay, and not to allow such animals, or any of them, to leave the place of arrival until they shall have been examined by the veterinarian and his certificate obtained that all are free from disease. * * * Any person failing to comply with this provision shall be deemed guilty of a misdemeanor, and, upon conviction, shall be fined not less than $50 nor more than $500 for each offense.

SEC. 9. The above regulations shall apply as well to animals in transit through the Territory, * * * and the Territorial veterinarian or his duly authorized agent shall have full authority to examine, whether in car, or yards, or stables, all animals passing through the Territory, or any part of it, and on detection or suspicion of disease to take possession of and treat and dispose of said animals in the same manner as is prescribed for animals resident in the Territory.

Whereas the governor of Wyoming did by proclamation on the 7th day of August, 1885, on account of the existence of contagious diseases among the cattle, schedule certain localities, and forbid the importation of cattle therefrom, except only on the conditions and the restrictions following:

(1) All cattle from localities scheduled by governor's proclamation will be quarantined on arrival in Wyoming.

(2) Cattle from localities not named in governor's proclamation must present proof: That they have been kept on one farm for the last four months; that no animals have been added to the herd during that period, and that no contagious disease has existed in the herd or vicinity.

(3) Affidavits of owners will be accepted as proof when the affiant's respectability is certified by his county clerk, or president of the bank in which they do business.

(4) Dealers' cattle, gathered over a wide extent of country, will be quarantined on arrival here (unless kept together four months previous to shipment).

(5) Veterinarians certificates of health are of no value, unless accompanied with proof that the herd have been isolated the previous four months.

(6) All cattle from the Western States, unable to furnish satisfactory proof, will be furnished corrals and sheds, and will be held in quarantine until by lapse of time they are proved free from disease—not more than ninety days. Cattle held in quarantine are at owners' risk and expense, and they will be allowed to buy feed in the market at the lowest rates.

(7) All cattle from the Southern States must furnish proof that they have been north of the "fever line" ninety days, or they will be quarantined until by lapse of time they are deemed safe to mingle with the native cattle—at least sixty days.

(8) All cattle coming into or passing through this Territory must unload at Cheyenne for inspection and examination of proof, and all such cattle are subject to the sanitary laws in force here.

(9) All cattle arriving here will be inspected free of charge to owner.

JAS D. HOPKINS,
Territorial Veterinarian.

CHEYENNE, WYO., *August* 6, 1885.

APPENDIX.

INVESTIGATION OF CONTAGIOUS PLEURO-PNEUMONIA.

Inspections of stables, &c., in New York.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by W. H. Wray, V. S.			
1884.				
Nov. 29	C. T. Hogen, 199 Fourth avenue, Mount Vernon	1	.....	Good.
29	J. M. Howell, 43 Sixth avenue, Mount Vernon	2	.....	Do.
29	C. Atwood, 75 Fifth avenue, Mount Vernon	1	.....	Do.
29	J. Suldrich, 220 Fourth avenue, Mount Vernon	2	.....	Do.
29	J. F. Barclay, 29 Stevens avenue, Mount Vernon	1	.....	Do.
29	J. Archer, Bridge street, Mount Vernon	13	.....	Do.
Dec. 1	Emory Hill, Westchester road, Westchester	78	.....	Do.
2	H. H. Hill, Westchester road, Westchester	35	.....	Do.
2	N. G. Bradford, jr., Westchester road, Westchester	15	.....	Do.
2	Charles H. Hill, Westchester road, Westchester	60	.....	Do.
3	M. Adee, Westchester road, Westchester	13	.....	Do.
3	L. H. Mace, Westchester road, Westchester	3	.....	Do.
4	F. Alder, Locust avenue, New Rochelle	1	.....	Do.
4	C. P. Barton, Locust avenue, New Rochelle	1	.....	Do.
4	William Baxter, Locust avenue, New Rochelle	1	.....	Do.
4	P. J. Krackle, Locust avenue, New Rochelle	2	.....	Do.
4	A. Brurpo, Locust avenue, New Rochelle	62	.....	Do.
4	W. S. Warland, Locust avenue, New Rochelle	2	.....	Do.
5	P. F. Mead, Huguenot street, New Rochelle	1	.....	Do.
5	D. Seacord, Huguenot street, New Rochelle	2	.....	Do.
5	G. B. Ackerman, Huguenot street, New Rochelle	1	.....	Do.
5	J. M. Carville, Huguenot street, New Rochelle	1	.....	Do.
5	A. Chaker, Huguenot street, New Rochelle	1	.....	Do.
5	I. Corwinne, Huguenot street, New Rochelle	2	.....	Do.
5	D. F. Davids, Huguenot street, New Rochelle	4	.....	Do.
6	William Griffin, Huguenot street, New Rochelle	16	.....	Do.
6	R. Gulager, Huguenot street, New Rochelle	1	.....	Do.
6	Mr. Hubbard, Huguenot street, New Rochelle	1	.....	Do.
6	C. Birtrer, Huguenot street, New Rochelle	4	.....	Do.
6	P. Burke, Huguenot street, New Rochelle	3	.....	Do.
6	S. Field, Huguenot street, New Rochelle	5	.....	Do.
6	S. P. Carpenter, Huguenot street, New Rochelle	6	.....	Do.
8	J. H. Palmer, Locust avenue, New Rochelle	1	.....	Do.
8	E. B. Pinckney, Locust avenue, New Rochelle	3	.....	Do.
8	J. B. Underhill, Locust avenue, New Rochelle	1	.....	Do.
8	E. D. Griggs, Locust avenue, New Rochelle	2	.....	Do.
8	J. Haggerty, Pelham road, New Rochelle	30	.....	Do.
9	George Newman, Pelham road, New Rochelle	19	.....	Do.
9	G. Tagliepietra, Pelham road, New Rochelle	1	.....	Do.
9	—— Thomson, Pelham road, New Rochelle	11	.....	Do.
9	D. Wright, Pelham road, New Rochelle	15	.....	Do.
9	M. T. Nicholson, Pelham road, New Rochelle	13	.....	Do.
10	A. Podewills, Pelham road, New Rochelle	16	.....	Do.
10	J. Reynolds, Pelham road, New Rochelle	14	.....	Do.
10	S. Barton, Pelham road, New Rochelle	1	.....	Do.
10	P. Edgar, Pelham road, New Rochelle	1	.....	Do.
10	B. F. Benton, Pelham road, New Rochelle	3	.....	Do.
10	Jos. Brown, Pelham road, New Rochelle	9	.....	Do.
11	A. Dederer, Prospect street, New Rochelle	1	.....	Do.
11	J. R. Stephenson, Huguenot avenue, New Rochelle	12	.....	Do.
11	F. Lawton, Huguenot avenue, New Rochelle	1	.....	Do.
11	J. McDonald, Huguenot avenue, New Rochelle	2	.....	Do.
11	Jos. B. Henry, Huguenot avenue, New Rochelle	2	.....	Do.
11	A. Taylor, Prospect street, New Rochelle	1	.....	Do.
11	J. Hubbarton, Huguenot street, New Rochelle	3	.....	Do.
11	N. Hardes, Huguenot street, New Rochelle	1	.....	Do.
12	L. A. Jackson, Huguenot street, New Rochelle	22	.....	Do.
12	C. H. De Luze, Drake avenue, New Rochelle	1	.....	Do.
12	C. Hoffneister, Huguenot street, New Rochelle	6	.....	Do.

Inspections of stables, &c., in New York—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by W. H. Wray, V. S.—Continued.			
1884.				
Dec. 12	J. I. Hollingshead, Huguenot street, New Rochelle	2	.....	Good.
12	C. Foster, Drake avenue, New Rochelle	4	.....	Do.
15	S. Francis, Pelham road, New Rochelle	11	.....	Do.
15	L. Freeman, Pelham road, New Rochelle	13	.....	Do.
15	S. Kerwin, Pelham road, New Rochelle	13	.....	Do.
15	D. Hurley, Pelham road, New Rochelle	9	.....	Do.
15	G. Griffen, North street, New Rochelle	7	.....	Do.
15	George Sitken, North street, New Rochelle	28	.....	Do.
15	T. Metz, North street, New Rochelle	6	.....	Do.
15	Phil Havey, Teuton street, New Rochelle	3	.....	Do.
15	George Hill, North street, New Rochelle	15	.....	Do.
15	G. H. Griffiths, North street, New Rochelle	2	.....	Do.
17	H. Calenberg, Union avenue, New Rochelle	1	.....	Do.
17	W. L. Cowdrey, Main street, New Rochelle	1	.....	Do.
17	M. Green, Main street, New Rochelle	1	.....	Do.
17	C. S. Odell, Union avenue, New Rochelle	2	.....	Do.
17	L. H. Bouton, Main street, New Rochelle	1	.....	Do.
17	E. M. Gernly, Main street, New Rochelle	3	.....	Do.
17	Benjamin Crawford, Main street, New Rochelle	1	.....	Do.
18	J. W. Briggs, Garden street, New Rochelle	30	.....	Do.
19	J. S. Pugh, Leland avenue, New Rochelle	2	.....	Do.
19	H. Barrett, Leland avenue, New Rochelle	2	.....	Do.
19	A. M. Bonnett, Garden street, New Rochelle	2	.....	Do.
19	G. A. Bedford, Leland avenue, New Rochelle	1	.....	Do.
19	P. J. Baptist, Leland avenue, New Rochelle	1	.....	Do.
19	W. D. Morrison, Leland avenue, New Rochelle	5	.....	Do.
20	R. Bartlett, Church street, New Rochelle	4	.....	Do.
20	A. Higgins, Burling lane, New Rochelle	3	.....	Do.
20	G. Govers, Church street, New Rochelle	2	.....	Do.
20	W. H. Young, Church street, New Rochelle	3	.....	Do.
20	A. Iselin, Church street, New Rochelle	7	.....	Do.
23	Mr. Davenport, Washington avenue, New Rochelle	2	.....	Do.
23	L. Bass, Washington avenue, New Rochelle	1	.....	Do.
23	J. Ferris, Washington avenue, New Rochelle	2	.....	Do.
23	W. Baldwin, Washington avenue, New Rochelle	2	.....	Do.
23	H. M. Le Count, Washington avenue, New Rochelle	7	.....	Do.
24	H. Hildebrand, Washington avenue, New Rochelle	12	.....	Do.
24	Phil Kimball, Hudson street, New Rochelle	1	.....	Do.
26	J. B. Davids, Bay View avenue, New Rochelle	6	.....	Do.
26	T. P. Jenkins, Bay View avenue, New Rochelle	4	.....	Do.
26	F. A. Seabury, Bay View avenue, New Rochelle	2	.....	Do.
26	C. Becker, Banks street, New Rochelle	1	.....	Do.
26	M. Bowman, Hudson street, New Rochelle	1	.....	Do.
26	A. J. Javey, Washington street, New Rochelle	1	.....	Do.
27	J. R. Putnam, Franklin street, New Rochelle	1	.....	Do.
27	W. W. Carrighan, Trinity street, New Rochelle	2	.....	Do.
27	W. White, Franklin avenue, New Rochelle	1	.....	Do.
27	L. O. Ward, Franklin avenue, New Rochelle	1	.....	Do.
27	W. H. Elliott, Beauchamp avenue, New Rochelle	1	.....	Do.
27	A. W. Tompkins, Banks street, New Rochelle	1	.....	Do.
27	A. G. Chapin, Beauchamp avenue, New Rochelle	1	.....	Do.
27	C. W. Allro, Echo avenue, New Rochelle	2	.....	Do.
27	J. Sweet, Beauchamp avenue, New Rochelle	2	.....	Do.
27	C. H. Disbrow, Franklin street, New Rochelle	2	.....	Do.
29	J. E. Coffee, Altha place, New Rochelle	1	.....	Do.
29	James Todd, Cedar street, New Rochelle	2	.....	Do.
29	H. A. Wolf, Charles street, New Rochelle	1	.....	Do.
29	J. Taylor, Center avenue, New Rochelle	1	.....	Do.
29	C. G. Miller, Center avenue, New Rochelle	2	.....	Do.
29	J. Wilmarth, Center avenue, New Rochelle	1	.....	Do.
29	J. Sturges, Hanford street, New Rochelle	1	.....	Do.
30	H. Behman, Railroad avenue, New Rochelle	1	.....	Do.
30	T. Dale, 4 Union avenue, New Rochelle	3	.....	Do.
30	J. Downs, 49 Eighth avenue, New Rochelle	1	.....	Do.
30	W. F. Landvean, First avenue, New Rochelle	3	.....	Do.
31	William French, Port Chester road, Rye	10	.....	Do.
31	Carpenter Bros., Port Chester road, Rye	15	.....	Do.
	Inspections by C. B. Michener, V. S.			
Dec. 23	Ellen Callahan, 146th and 147th sts. and Brook ave., N. Y.	4	.....	Very good.
23	Timothy Clark, 147th street and Brook avenue, N. Y.	7	.....	Good.
23	Patrick Scanlon, 146th and 147th sts. and Brook ave., N. Y.	3	.....	Do.
23	Fred. Paulus, 150th st. bet. College and Railroad aves., N. Y.	9	.....	Do.
25	John Smith, 449 E. 146th street, N. Y	25	.....	Do.
25	Peter Olson, 523 E. 148th street, N. Y	23	.....	Do.

Inspections of stables, &c., in New York—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by C. B. Michener, V. S.—Continued.			
1884.				
Dec. 27	James Laughlin, 518 E. 150th street, N. Y	11	.....	Very good.
27	Gustav Denninger, 593 Bergen avenue, N. Y	6	.....	Good.
27	Thomas Cramer, 476 E. 152d street, N. Y	8	.....	Do.
27	James Lynch, 474 E. 152d street, N. Y	3	.....	Do.
29	John Kent, 128 Madison street, N. Y	1	.....	Do.
30	James Loeher, 458 E. 151st street, N. Y	13	.....	Do.
30	Mrs. Rea, 143d street and Brook avenue, N. Y	3	.....	Do.
30	M. Farley, 143d and 144th streets and Brook avenue, N. Y	10	.....	Do.
30	F. Hawcher, 153 Willet street, N. Y	2	.....	Do.
1885.				
Jan. 1	M. Geisman, Rose street and Bergen avenue, N. Y	14	.....	Do.
1	William Gerhart, 606 Rose street and Bergen avenue, N. Y	6	.....	Do.
2	John Fitzpatrick, 37 Sheriffs street, N. Y	1	.....	Do.
3	N. Blumenaner, 152d and 153d streets and Bergen ave., N. Y	51	.....	Very good.
	Inspections by T. J. Herr, V. S.			
Jan. 3	Patrick Ruddy, 227 Delancey street, N. Y	1	.....	Good.
5	—— Kalz, First avenue bet. 44th and 45th streets, N. Y	2	.....	Do.
5	M. Fleishaurer, First avenue bet. 44th and 45th streets, N. Y	2	.....	Do.
6	P. Maloney, 222 E. 6th street, N. Y	2	.....	Do.
6	A. Harris, 332 Delancey street, N. Y	4	.....	Do.
7	A. Crownhardt, 710 E. 13th street, N. Y	.....	.....	Do.
7	M. Weil, 263 E. 10th street, N. Y	1	.....	Do.
9	—— Trophy, 449 E. 54th street, N. Y	10	.....	Do.
9	Mrs. Brodrick, 453 E. 54th street, N. Y	3	.....	Do.
10	Joseph Orphan Asylum, 89th street and Avenue A, N. Y	8	1	Do.
10	George Schmidt, First avenue and 91st street, N. Y	17	6c.	Do.
	Inspections by C. B. Michener, V. S.			
Jan. 6	Wendel Schaup, 156th street and Morris avenue, N. Y	1	.....	Good.
6	Theo. Heisner, 659 E. 156th street, N. Y	8	.....	Do.
6	Louis Federer, 613 E. 157th street, N. Y	6	.....	Do.
8	Henry Ruhm, 154th and 155th sts. and Railroad ave., N. Y	1	.....	Do.
8	Louis Kneip, 634 E. 161st street, N. Y	14	.....	Do.
8	J. Fay, 1315 Railroad avenue, N. Y	9	.....	Do.
10	William Currele, 137 E. Southern Boulevard, N. Y	2	.....	Do.
10	F. S. Harvey, south side 136th street, W. Third avenue, N. Y.	14	.....	Do.
10	James Riley, 136th street, near College avenue, N. Y	9	.....	Do.
13	Catharine Paulus, 141st street and East River, N. Y	27	.....	Stable, ordinary; animals, fair.
14	Saint Joseph's Orphan Asylum, Eighty-ninth ave. and Avenue A, N. Y.	7	.....	Good.
14	House of Good Shepherd, 90th street and Avenue A, N. Y	1	.....	Do.
15	S. S. Harvey, 136th street, E. Third avenue, N. Y	14	.....	Stable, fair; animals, average.
15	Thomas Crane, E. cor. 135th street, N. Y	6	.....	Good.
15	William Frindley, 34th street and Brown place, N. Y	5	.....	Very good.
15	Patrick Donlon, 767 E. 134th street, N. Y	3	.....	Do.
	Inspections by T. J. Herr, V. S.			
Jan. 16	A. Picard, 50th street and East River, N. Y	10	.....	Good.
16	J. Frank, 49th street and East River, N. Y	6	.....	Do.
16	A. H. Sonn, 404 E. 42d street, N. Y	2	.....	Do.
17	Isaac Dahlman, 224 E. 24th street, N. Y	1	.....	Do.
17	Jac. Dahlman, 207 E. 24th street, N. Y	1	.....	Do.
17	Charles Hayman, 215 E. 24th street, N. Y	1	.....	Do.
17	Leaf Killer, 215 E. 24th street, N. Y	1	.....	Do.
17	J. McParlin, 136th st. bet. St. Ann's and So. Boulevard, N. Y	1	.....	Do.
17	D. Ladilear, 894 E. 137th street, N. Y	1	.....	Do.
17	Ed. Marston, 136th street and Southern Boulevard, N. Y	7	.....	Do.
17	Peter Whalen, 954 E. 138th street, N. Y	1	.....	Do.
17	J. J. Crane, 138th street near Southern Boulevard, N. Y	6	.....	Very good.
17	Hugh Lennon, 136th street, near Southern Boulevard, N. Y	7	.....	Good.
17	James Martin, 778 142d street, N. Y	1	.....	Do.
	Inspections by W. H. Wray, V. S.			
Jan. 2	I. Sniffen, White Plains, Westchester County	22	.....	Good.
3	A. Wetmore, Port Chester, Westchester County	14	.....	Do.
3	W. Lyon, Port Chester, Westchester County	31	.....	Do.
3	G. W. Swintard, Port Chester, Westchester County	2	.....	Do.
3	P. Rolhane, Port Chester, Westchester County	1	.....	Do.
5	M. Bernhard, Port Chester, Westchester County	1	.....	Do.

Inspections of stables, &c., in New York—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No of cattle.	No. with lung-plague.	Condition.
	Inspections by W. H. Wray, V. S.—Continued.			
1885.				
Jan. 5	E. L. Smith, Port Chester, Westchester County	14	.....	Good.
5	E. Kelby, jr., Port Chester, Westchester County	3	.....	Do.
5	George Frost, Port Chester, Westchester County	17	.....	Do.
5	W. Baker, Port Chester, Westchester County	1	.....	Do.
5	W. W. Whiting, Port Chester, Westchester County	1	.....	Do.
5	J. Todd, Port Chester, Westchester County	8	.....	Do.
5	E. B. Lowder, Port Chester, Westchester County	1	.....	Do.
7	Dennis Murray, Yonkers, Westchester County	28	.....	Do.
8	E. B. Whittmore, Port Chester, Westchester County	1	.....	Do.
8	C. Saxer, Westchester road, Westchester County	3	.....	Do.
8	D. S. Anan, Westchester County	2	.....	Do.
8	W. H. R. Ramsey, Port Chester, Westchester County	1	.....	Do.
8	J. W. Merritt, Port Chester, Westchester County	13	.....	Do.
8	George Merritt, Port Chester, Westchester County	29	.....	Do.
8	C. B. Merritt, Port Chester, Westchester County	1	.....	Do.
8	G. H. Simpson, Port Chester, Westchester County	1	.....	Do.
8	J. Davis, Port Chester, Westchester County	1	.....	Do.
8	R. Wood, Port Chester, Westchester County	2	.....	Do.
9	S. Slater, Port Chester, Westchester County	17	.....	Do.
9	H. Cohanno, Port Chester, Westchester County	1	.....	Do.
9	E. B. Wesley, Port Chester, Westchester County	1	.....	Do.
9	A. H. Gale, Port Chester, Westchester County	1	.....	Do.
9	E. Haacke, Port Chester, Westchester County	4	.....	Do.
9	C. A. Breck, Port Chester, Westchester county	2	.....	Do.
10	J. D. Guning, Port Chester, Westchester County	1	.....	Do.
10	G. H. Moller, Port Chester, Westchester County	1	.....	Do.
10	N. Ferris, Port Chester, Westchester County	26	.....	Do.
10	M. Day, jr., Port Chester, Westchester County	1	.....	Do.
10	J. H. Waydell, Port Chester, Westchester County	1	.....	Do.
10	E. Angevine, Port Chester, Westchester County	2	.....	Do.
10	J. Ahents, Port Chester, Westchester County	3	.....	Do.
13	S. Comby, Port Chester, Westchester County	1	.....	Do.
13	G. Brower, Port Chester, Westchester County	4	.....	Do.
13	W. H. Slater, Port Chester, Westchester County	30	.....	Do.
13	E. Burdsell, Port Chester, Westchester County	3	.....	Do.
13	A. B. Platt, Port Chester, Westchester County	1	.....	Do.
13	W. E. Ward, Port Chester, Westchester County	1	.....	Do.
14	M. Aylmar, Port Chester, Westchester County	27	.....	Do.
14	S. Merritt, Port Chester, Westchester County	2	.....	Do.
14	P. Leevy, Port Chester, Westchester County	11	.....	Do.
14	S. Bailie, Port Chester, Westchester County	3	.....	Do.
14	G. Bachle, Port Chester, Westchester County	2	.....	Do.
14	D. Haight, Port Chester, Westchester County	1	.....	Do.
14	J. Wiegand, Port Chester, Westchester County	2	.....	Do.
14	J. Delano, Port Chester, Westchester County	1	.....	Do.
17	G. Carpenter, Port Chester, Westchester County	5	.....	Do.
17	Mr. Hutchings, Port Chester, Westchester County	18	.....	Do.
17	J. W. Lawrence, Port Chester, Westchester County	2	.....	Do.
17	D. C. Rogers, Port Chester, Westchester County	1	.....	Do.
17	J. McCullough, Port Chester, Westchester County	14	.....	Do.
17	J. Crooker, Port Chester, Westchester County	2	.....	Do.
19	F. A. Slater, Port Chester, Westchester County	21	.....	Do.
19	J. W. Merritt, Port Chester, Westchester County	42	.....	Do.
19	J. C. Moe, Port Chester, Westchester County	22	.....	Do.
20	A. Park, Port Chester, Westchester County	17	.....	Do.
20	A. Ferriss, Port Chester, Westchester County	2	.....	Do.
20	D. P. Ferriss, Port Chester, Westchester County	1	.....	Do.
20	C. Herchab, Port Chester, Westchester County	13	.....	Do.
20	N. C. Durham, Port Chester, Westchester County	2	.....	Do.
20	E. Eldridge, Port Chester, Westchester County	1	.....	Do.
20	R. Auser, Port Chester, Westchester County	19	.....	Do.
21	H. H. Allro, White Plains, Westchester County	2	.....	Do.
21	E. T. Prudhomme, White Plains, Westchester County	1	.....	Do.
21	W. White, White Plains, Westchester County	3	.....	Do.
21	W. Baldwin, White Plains, Westchester County	1	.....	Do.
21	O. Wallace, White Plains, Westchester County	1	.....	Do.
21	C. H. Baumbach, White Plains, Westchester County	1	.....	Do.
21	J. O. Dykman, White Plains, Westchester County	2	.....	Do.
21	W. T. Sands, White Plains, Westchester County	1	.....	Do.
21	A. Wright, White Plains, Westchester County	2	.....	Do.
21	C. W. Cochran, White Plains, Westchester County	2	.....	Do.
21	H. Purdy, White Plains, Westchester County	2	.....	Do.
21	M. M. Silliman, White Plains, Westchester County	2	.....	Do.
21	O. Close, White Plains, Westchester County	2	.....	Do.
22	G. R. Brodie, White Plains, Westchester County	3	.....	Do.

Inspections of stables, &c., in New York—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition
	Inspections by W. H. Wray, V. S.—Continued.			
1885.				
Jan. 22	E. Von Tassell, White Plains, Westchester County	2	.....	Good.
22	F. Brandage, White Plains, Westchester County	1	.....	Do.
22	G. Hart, White Plains, Westchester County	18	.....	Do.
22	H. Berlin, White Plains, Westchester County	1	.....	Do.
22	E. Hunt, White Plains, Westchester County	11	.....	Do.
22	O. C. Lyon, White Plains, Westchester County	2	.....	Do.
23	James Brodie, White Plains, Westchester County	19	.....	Do.
23	R. Stack, White Plains, Westchester County	7	.....	Do.
23	A. Kennedy, White Plains, Westchester County	9	.....	Do.
23	M. Donohue, jr., White Plains, Westchester County	9	.....	Do.
23	B. Gedney, White Plains, Westchester County	17	.....	Do.
24	Mrs. Carhart, White Plains, Westchester County	3	.....	Do.
24	D. Leggett, White Plains, Westchester County	15	.....	Do.
24	D. Horton, White Plains, Westchester County	16	.....	Do.
24	S. Faile, White Plains, Westchester County	32	.....	Do.
26	C. Crawford, White Plains, Westchester County	28	.....	Do.
26	T. Purdy, White Plains, Westchester County	16	.....	Do.
26	S. Mott, White Plains, Westchester County	2	.....	Do.
26	N. Seymore, White Plains, Westchester County	6	.....	Do.
27	A. Hopper, White Plains, Westchester County	4	.....	Do.
27	E. C. Sniffen, White Plains, Westchester County	15	.....	Do.
27	R. Webber, White Plains, Westchester County	3	.....	Do.
27	E. C. Onderdock, White Plains, Westchester County	32	.....	Do.
27	C. Lockwood, White Plains, Westchester County	19	.....	Do.
27	James Gibson, White Plains, Westchester County	12	.....	Do.
27	E. Purdy, White Plains, Westchester County	13	.....	Do.
27	G. W. Fish, White Plains, Westchester County	13	.....	Do.
29	P. Skelly, White Plains, Westchester County	7	.....	Do.
29	P. Ferrell, White Plains, Westchester County	4	.....	Do.
29	C. Willis, White Plains, Westchester County	2	.....	Do.
29	H. Maynard, White Plains, Westchester County	15	.....	Do.
29	G. Prior, White Plains, Westchester County	5	.....	Do.
29	W. T. Sands, White Plains, Westchester County	3	.....	Do.
29	J. R. Tompkins, White Plains, Westchester County	11	.....	Do.
29	E. Horton, White Plains, Westchester County	2	.....	Do.
31	O. Ward, White Plains, Westchester County	2	.....	Do.
31	E. Jermain, White Plains, Westchester County	1	.....	Do.
31	F. Brown, White Plains, Westchester County	1	.....	Do.
31	C. W. Hale, White Plains, Westchester County	1	.....	Do.
31	I. Tompkins, White Plains, Westchester County	21	.....	Do.
31	L. Miller, White Plains, Westchester County	4	.....	Do.
31	I. Cooley, White Plains, Westchester County	2	.....	Do.
31	S. W. Smith, White Plains, Westchester County	2	.....	Do.
31	J. Havilard, White Plains, Westchester County	7	.....	Do.
Feb. 2	A. Wiggins, Grace street, Rye, Westchester County	2	.....	Do.
2	C. E. Anderson, Grace street, Rye, Westchester County	1	.....	Do.
2	J. D. Fyfe, Main street, Rye, Westchester County	1	.....	Do.
2	J. M. Ives, Main street, Rye, Westchester County	1	.....	Do.
2	R. S. Hayward, Grace street, Rye, Westchester County	1	.....	Do.
2	D. F. Bell, Grace street, Rye, Westchester County	1	.....	Do.
2	O. Murray, Main street, Rye, Westchester County	4	.....	Do.
2	J. Brooks, Main street, Rye, Westchester County	3	.....	Do.
2	M. Sullivan, Main street, Rye, Westchester County	6	.....	Do.
2	M. S. Loder, Main street, Rye, Westchester County	5	.....	Do.
2	P. Ford, Main street, Rye, Westchester County	27	.....	Do.
3	H. C. Coon, Main street, Rye, Westchester County	13	.....	Do.
3	W. Smith, North street, Rye, Westchester County	28	.....	Do.
3	George Harvey, North street, Rye, Westchester County	12	.....	Do.
3	E. S. Clark, North street, Rye, Westchester County	14	.....	Do.
4	M. Reilly, Maple street, Rye, Westchester County	14	.....	Do.
4	James Harvey, North street, Rye, Westchester County	16	.....	Do.
4	J. B. Dey, Locust street, Rye, Westchester County	1	.....	Do.
4	P. McCloskey, North Street, Rye, Westchester County	23	.....	Do.
4	J. W. Buckley, Locust street, Rye, Westchester County	17	.....	Do.
5	S. Gruman, Boston road, Rye, Westchester County	31	.....	Do.
5	C. S. Purdy, Boston road, Rye, Westchester County	15	.....	Do.
5	H. Cargill, Boston road, Rye, Westchester County	1	.....	Do.
5	Benjamin Mead, Boston road, Rye, Westchester County	18	.....	Do.
5	George Brown, Boston road, Rye, Westchester County	2	.....	Do.
5	A. B. Theall, Boston road, Rye, Westchester County	19	.....	Do.
7	W. Purdy, Boston road, Rye, Westchester County	7	.....	Do.
7	G. Reynolds, Milton avenue, Rye, Westchester County	12	.....	Do.
7	W. Halstead, Milton avenue, Rye, Westchester County	18	.....	Do.
7	S. Stiles, Milton avenue, Rye, Westchester County	17	.....	Do.
7	James Reynolds, Milton avenue, Rye, Westchester County	14	.....	Do.

Inspections of stables, &c., in New York—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by W. H. Wray, V. S.—Continued.			
1885.				
Feb. 7	E. O. Sherman, Milton avenue, Rye, Westchester County	1	.....	Good.
9	A. Stout, Cedar street, Rye, Westchester County	3	.....	Do.
9	P. Dunlan, High street, Rye, Westchester County	20	.....	Do.
9	W. Whims, High street, Rye, Westchester County	18	.....	Do.
9	R. K. Anthony, Cedar street, Rye, Westchester County	2	.....	Do.
9	J. Edwards, Forest avenue, Rye, Westchester County	1	.....	Do.
9	P. H. Davis, Cottage Park, Rye, Westchester County	1	.....	Do.
9	C. Clark, Cedar street, Rye, Westchester County	2	.....	Do.
9	I. M. Babbitt, Purchase street, Rye, Westchester County	1	.....	Do.
9	C. Sloney, New street, Rye, Westchester County	1	.....	Do.
11	D. Raymond, Purchase street, Rye, Westchester County	11	.....	Do.
11	J. McGeary, Purchase street, Rye, Westchester County	28	.....	Do.
11	J. Hargrave, Elm street, Rye, Westchester County	9	.....	Do.
12	H. Riley, Evergreen street, Rye, Westchester County	24	.....	Do.
12	E. Billington, Purdy avenue, Rye, Westchester County	10	.....	Do.
12	James Coffee, Purdy avenue, Rye, Westchester County	11	.....	Do.
12	A. Carpenter, Evergreen avenue, Rye, Westchester County	21	.....	Do.
13	J. Haight, Rye Beach road, Rye, Westchester County	7	.....	Do.
13	J. Billington, Main street, Rye, Westchester County	17	.....	Do.
13	W. Beck, Main street, Rye, Westchester County	2	.....	Do.
13	J. E. Corning, Main street, Rye, Westchester County	1	.....	Do.
13	J. Kaus, Main street, Rye, Westchester County	9	.....	Do.
13	W. H. Parsons, Rye Beach road, Rye, Westchester County	3	.....	Do.
13	J. Peck, Main street, Rye, Westchester County	1	.....	Do.
13	A. Halstead, Main street, Rye, Westchester County	1	.....	Do.
13	J. Tracey, Main street, Rye, Westchester County	18	.....	Do.
14	G. D. Cragin, North street, Rye, Westchester County	22	.....	Do.
14	C. Weeks, Grace street, Rye, Westchester County	1	.....	Do.
14	G. Miller, Grace street, Rye, Westchester County	7	.....	Do.
14	W. Seaman, Purchase street, Rye, Westchester County	4	.....	Do.
14	J. B. Taylor, Grace street, Rye, Westchester County	2	.....	Do.
14	E. B. Cowles, Grace street, Rye, Westchester County	1	.....	Do.
14	T. Crooker, Grace street, Rye, Westchester County	1	.....	Do.
14	W. Robinson, Grace street, Rye, Westchester County	3	.....	Do.
14	Thomas Peck, Purchase street, Rye, Westchester County	3	.....	Do.
	Inspection by Thomas J. Herr, V. S.			
Jan. 29	Mrs. Burns, 98th street and East River, N. Y	10	.....	Good.
29	P. Collins, Second avenue, N. Y	6	.....	Do.
30	George Florshite, 319 E. 103d street, N. Y	6	.....	Do.
30	John Tisteed, 103d street and Second avenue, N. Y	8	.....	Do.
Feb. 3	John Rudden, corner 153d street and Fourth avenue, N. Y	2	.....	Do.
3	Henry Brindle, 765 E. 162d street, N. Y	14	.....	Do.
3	Moses Weil, 263 E. 10th street, N. Y	1	.....	Do.
3	Jacob Ruppert, 91st street and Second avenue, N. Y	2	.....	Do.
3	Jacob Weiler, 1248 Third avenue, N. Y	8	.....	Very good.
5	George Urstadt, 670 E. 153d street, N. Y	6	.....	Good.
5	P. & H. Ebeling, 156th street and Saint Ann's avenue, N. Y	2	.....	Do.
5	M. Tuckenbrodt, 705 E. 165th street, N. Y	9	.....	Do.
5	A. Hupfel, 161st street and Saint Ann's avenue, N. Y	1	.....	Do.
5	—— Hunt, 161st street and Saint Ann's avenue, N. Y	1	.....	Do.
5	—— Boumar, 161st street and Saint Ann's avenue, N. Y	2	.....	Do.
7	Jos. Bopp, 604 Robbins avenue, N. Y	12	.....	Do.
7	Jos. Schwab, 148 Robbins avenue, N. Y	22	.....	Do.
7	A. Crownhardt, 710 E. 3d street, N. Y	1	.....	Do.
7	John Rheinfrank, 132 Goeuck street, N. Y	2	.....	Do.
12	Maggie Welch, 435 E. 71st street, N. Y	3	.....	Do.
12	Vincent Gusler, 74th street and East River, N. Y	1	.....	Do.
14	Conrad Wigmore, 73d street and East River, N. Y	2	.....	Do.
14	William Grogan, 502 E. 71st street, N. Y	22	.....	Do.
	Inspections by C. B. Michener, V. S.			
Feb. 20	Mary Fleishman, 164th street and Courtland avenue, N. Y	1	.....	Good.
20	John Frisel, 772 Elton avenue, N. Y	3	.....	Do.
20	J. Steinboch, 815 Elton avenue, N. Y	3	.....	Do.
20	Mary Eckel, 863 Courtland avenue, N. Y	3	.....	Do.
	Inspections by Thomas J. Herr, V. S.			
Feb. 20	James Ward, 163d street, near Brook avenue, N. Y	6	.....	Good.
21	Sol. Merhbeck, 152 E. 24th stret, N. Y	6	.....	Do.
Jan. 21	—— Mathews, 214 E. 24th street, N. Y	1	.....	Do.
22	Charles McCabe, 204 E. 25th street, N. Y	1	.....	Do.
22	John Carnett, 17 E. 31st street, N. Y	1	.....	Do.

Inspection of stables, &c., in New York—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by C. B. Michener, V. S.			
1885.				
Jan. 22	Mrs. Widder, 163d street, near Courtland avenue, N. Y	11	.....	Good.
22	Mrs. Decker, 613 E. 159th street, N. Y	3	.....	Do.
22	William Paulus, 649 E. 159th street, N. Y	7	.....	Do.
22	Mrs. Denmerlin, 645 E. 160th street, N. Y	23	.....	Do.
	Inspections by Thomas J. Herr, V S.			
Jan. 23	John Kress, 219 E. 54th street, N. Y	1	.....	Good.
23	Fritz Opperman, 329 E. 45th street, N. Y	1	.....	Do.
24	Aug. Braun, 65th street and East River, N. Y	5	.....	Do.
	Inspections by C. B. Michener, V. S.			
Jan. 24	F. Miller, 152d street and Third avenue, N. Y	2	.....	Good.
24	Mrs. Huffe, 687 E. 152d street, N. Y	3	.....	Do.
24	Maggie Reme, 530 E. 151st street, N. Y	2	.....	Do.
24	Robert Hall, 500 E. 142d street, N. Y	5	.....	Do.
24	J. J. Hoyt, 146th street and College avenue, N. Y	1	.....	Do.
24	John Furken, 533 E. 146th street, N. Y	4	.....	Do.
	Inspections by W. H. Wray, V. S.			
Jan. 17	H. Duin, Rye, Westchester County	1	.....	Good.
17	G. Titus, Rye, Westchester County	1	.....	Do.
17	D. Odell, Rye, Westchester County	8	.....	Do.
17	T. Miley, Rye, Westchester County	5	.....	Do.
17	C. Bouton, Rye, Westchester County	1	.....	Do.
17	W. Higgins, Rye, Westchester County	1	.....	Do.
17	J. Weed, Rye, Westchester County	3	.....	Do.
19	A. B. Mills, Rye, Westchester County	2	.....	Do.
19	P. Driscoll, Rye, Westchester County	9	.....	Do.
19	J. Ryan, Rye, Westchester County	26	.....	Do.
19	P. Hogan, Rye, Westchester County	11	.....	Do.
20	J. Erving, Rye, Westchester County	2	.....	Do.
20	J. Hains, Rye, Westchester County	....	.....	Do.
Feb. 20	J. Titus, Rye, Westchester County	1	.....	Do.
20	G. Underhill, Rye, Westchester County	2	.....	Do.
20	L. Schaeffer, Rye, Westchester County	12	.....	Do.
20	C. T. Cromwell, Rye, Westchester County	2	.....	Do.
21	C. Ingman, Rye, Westchester County	14	.....	Do.
21	J. Gleason, Rye, Westchester County	1	.....	Do.
21	G. Van Wagener, Rye, Westchester County	1	.....	Do.
21	F. R. Lesher, Rye, Westchester County	2	.....	Do.
	Inspections by C. B. Michener, V. S.			
Feb. 10	Mrs. Bershall, 139th and 140th streets and Locust ave., N. Y	3	.....	Good.
10	T. Bane, 140th street and Locust avenue, N. Y	1	.....	Do.
10	Charles Schreiber, 164th street, near Fourth avenue, N. Y	1	.....	Do.
10	William Marl, 1327 Railroad avenue, N. Y	6	.....	Do.
10	Robert Hall, 1038 E. 138th street, N. Y	1	.....	Do.
12	Mary Devine, 1255 Railroad avenue, N. Y	1	.....	Do.
12	V. Schultz, 1325 Railroad avenue, N. Y	10	1	Do.
12	William Burton, 1110 Forest avenue, N. Y	1	.....	Do.
12	John Frawley, 965 Forest avenue, N. Y	3	.....	Do.
12	P. Currie, 966 Railroad avenue, N. Y	7	.....	Fair.
12	Andrew Wynne, 167 Railroad avenue, N. Y	2	.....	Good.
14	Hugh Weisse, 167 Railroad avenue, N. Y	16	.....	Do.
14	William Morris, 827 E. 146th street, N. Y	1	.....	Do.
14	Thomas Murphy, 613 Robbins avenue, N. Y	5	.....	Do.
14	P. Lawter, 984 E. 151st street, N. Y	2	.....	Do.
17	Jacob Vogle, 984 E. 151st street, N. Y	2	.....	Do.
17	F. Kenner, 596 Robbins avenue, N. Y	2	.....	Do.
17	J. Haningan, 606 Robbins avenue, N. Y	1	.....	Do.
17	W. Rivinhausen, 606 Robbins avenue, N. Y	4	.....	Do.
19	Fred. Fischer, 837 E. 169th street, N. Y	1	.....	Do.
19	D. Comfort, 1315 Franklin avenue, N. Y	1	.....	Do.
19	J. Eichler, 169th street and Franklin avenue, N. Y	2	.....	Do.
19	John Rafferty, 1342 Clinton avenue, N. Y	5	.....	Do.
21	John Ryan, 512 E. 82d street, N. Y	2	.....	Do.
	Inspections by Thomas J. Herr, V. S.			
Feb. 21	Henry Konig, 82d street, near Avenue A, N. Y	3	.....	Good.
21	C. Hurge, 82d street, near Avenue A, N. Y	1	.....	Do.
21	Ph. Herdt, 834 E. 169th street, N. Y	1	.....	Do.

. *Inspections of stables, &c., in New York*—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by C. B. Michener, V. S.			
1885.				
Feb. 21	Louis Cooke, 1219 Union avenue, N. Y	1	.....	Good.
21	Charles White, 169 Boston avenue, N. Y	1	.....	Do.
21	Fritz Zohn, 168 Boston avenue, N. Y	3	.....	Do.
21	S. Love, 1101 Union avenue, N. Y	9	.....	Do.
24	G. Case, 161st street and Central avenue, N. Y	3	.....	Do.
24	J. Murphy, 164th street, near Morris avenue, N. Y	1	.....	Do.
24	James Farrell, Fleetwood Track avenue, N. Y	1	.....	Do.
24	H. B. Veirk, 1133 Boston avenue, N. Y	1	.....	Do.
24	George Black, 167 street and Boston avenue, N. Y	1	.....	Do.
24	James Picket, 169th street and Boston avenue, N. Y	1	.....	Do.
24	L. Deitsch, 888 Caldwell avenue, N. Y	1	.....	Stable, unclean; animals, good.
26	F. K. Kearney, Boulevard and Springhouse avenue, N. Y	18	.....	Stable, very good; animals, very good.
26	F. Fail, Hunt's Point avenue, N. Y	2	.....	Good.
26	W. Gilbert, Hunt's Point avenue, N. Y	1	.....	Do.
26	C. D. Dickey, Hunt's Point avenue, N. Y	3	.....	Do.
	Inspections by Thomas J. Herr, V. S.			
Feb. 26	—— Marks, 47th street and East River avenue, N. Y	6	.....	Good.
26	Loeb Bros., 47th street and East River avenue, N. Y	12	.....	Do.
26	Corbett, 421 E. 120th street, N. Y	3	.....	Do.
27	J. Hetch, 172 Delancey street, N. Y	6	.....	Do.
27	John Rhinefrank, Garrick street, N. Y	1	.....	Do.
28	William Simpson, Hunt's Point avenue, N. Y	46	.....	Do.
28	J. M. Beck, 156th street and St. Ann's avenue, N. Y	1	.....	Do.
28	George Ringler, bet. Second and Third aves., N. Y	3	.....	Do.
28	John Distela, 103d street and Second avenue, N. Y	8	.....	Do.
28	—— Stahl, Pleasant avenue, N. Y	11	.....	Do.
	Inspections by C. B. Michener, V. S.			
Feb. 28	J. E. Ives, Hunt's Point, N. Y	3	.....	Very good.
	Inspections by W. H. Wray, V. S.			
Feb. 24	J. Lent, Upper New Rochelle, Westchester County	1	.....	Good.
24	J. Gamison, Upper New Rochelle, Westchester County	11	.....	Do.
24	L. Lange, Upper New Rochelle, Westchester County	8	.....	Do.
24	J. Shaclenbug, Upper New Rochelle, Westchester County	2	.....	Do.
24	Mrs. Val Burtiss, Upper New Rochelle, Westchester County	6	.....	Do.
24	P. Kauffman, Upper New Rochelle, Westchester County	4	.....	Do.
25	Thomas Walsh, Upper New Rochelle, Westchester County	32	.....	Do.
26	J. G. Ross, Upper New Rochelle, Westchester County	8	.....	Do.
26	Thomas Ward, Upper New Rochelle, Westchester County	19	.....	Do.
26	Fred. Fowler, Upper New Rochelle, Westchester County	3	.....	Do.
26	J. Kollmer, Upper New Rochelle, Westchester County	12	.....	Do.
28	P. Murphy, Mamaroneck, Westchester County	6	.....	Do.
28	George Underhill, Mamaroneck, Westchester County	17	.....	Do.
28	J. Kusche, Mamaroneck, Westchester County	14	.....	Do.
28	George Gesel, Mamaroneck, Westchester County	4	.....	Do.
28	J. McGinness, Mamaroneck, Westchester County	2	.....	Do.
	Inspections by C. B. Michener, V. S.			
Mar. 3	J. Flynn, 135th street and Lincoln avenue, N. Y	1	.....	Good.
3	R. M. Hoe, Westchester avenue, N. Y	34	.....	Do.
3	Nuc. Englehard, 92d street and First avenue, N. Y	3	.....	Do.
3	Saint Joseph's Asylum, 90th street and Avenue A, N. Y	6	2	Do.
5	Henry Michols, Barrett's Point, N. Y	3	.....	Do.
5	Morris Shellenberg, Barrett's Point, N. Y	16	.....	Do.
5	E. B. Sartoss, Barrett's Point, N. Y	2	.....	Do.
5	George Schmidt, 90th street and First avenue, N. Y	19	6c.	Do.
5	George Dorr, 467 E. 90th street, N. Y	9	.....	Do.
7	George Ringler, 91st street, bet. Second and Third aves., N. Y	3	.....	Do.
7	House of Good Shepherd, 90th street and Avenue A, N. Y	1	.....	Do.
7	Charles Rieger, 203 92d street, N. Y	7	.....	Do.
7	F. Bader, 168th street, near Union avenue, N. Y	11	.....	Do.
7	P. McNalley, 147th street and Southern Boulevard, N. Y	1	.....	Do.
7	William Ryan, 147th street and Southern Boulevard, N. Y	1	.....	Do.
7	J. Furney, 149th street, near Southern Boulevard, N. Y	1	.....	Do.
7	Morris Deitsch, 149th street, near Southern Boulevard, N. Y	2	.....	Do.

Inspections of stables, &c., in New York—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition
	Inspections by W. H. Wray, V. S.			
1885.				
Mar. 2	H. Mehlhop, Mount Vernon, Westchester County	3	.....	Good.
2	J. Roedding, Washingtonville, Westchester County	2	.....	Do.
2	C. J. Reinhart, Mount Vernon, Westchester County	7	.....	Do.
2	J. Hodges, Mount Vernon, Westchester County	6	.....	Do.
2	Mr. Penfield, Mount Vernon, Westchester County	10	.....	Do.
2	Mr. Williams, Washingtonville, Westchester County	2	.....	Do.
2	J. C. Clifford, Washingtonville, Westchester County	2	.....	Do.
3	Chris. Corsa, Wakefield, Westchester County	20	.....	Do.
3	Mrs. Bussing, Wakefield, Westchester County	2	.....	Do.
3	C. Flanagan, Bronxville, Westchester County	2	.....	Do.
3	Mrs. Lou, Bronxville, Westchester County	3	.....	Do.
3	J. Murphy, Wakefield, Westchester County	3	.....	Do.
4	Seifer estate, Bronxville, Westchester County	1	.....	Do.
4	N. Roddin, Bronxville, Westchester County	2	.....	Do.
4	Thomas Booth, Bronxville, Westchester County	4	.....	Do.
4	Statistien & Liverman, Bridge, Westchester County	23	.....	Filthy.
6	....do....	100	.....	Do.
10	B. Ludlow, Woodlawn, Westchester County	10	.....	Do.
10	Mr. Spear, Clausen's Point, Westchester County	6	.....	Good.
10	H. R. C. Watson, Willmount, Westchester County	25	.....	Do.
10	Mr. Neale, Willmount, Westchester County	3	.....	Do.
10	Brothers R. C Academy, Clausen's Point, Westchester Co.	12	.....	Do.
10	George Barnabus, Clausen's Point, Westchester County	6	.....	Do.
11	F. Devine, Westchester, Westchester County	38	.....	Do.
11	Mr. Kuzig, Clausen's Point, Westchester County	3	.....	Do.
11	Mr. Decker, Clausen's Point, Westchester County	2	.....	Do.
11	William Guin, Westchester, Westchester County	15	.....	Do.
12	Mr. Brunig, Clausen's Point, Westchester County	3	.....	Do.
12	N. Y. Cath. Protectory, Westchester, Westchester County	21	.....	Do.
	Inspections by C. B. Michener, V. S.			
Mar. 10	C. Lochbaum, 157 Westchester avenue, Westchester County	1	.....	Good.
10	Ursuline Convent, 157 Westchester ave., Westchester Co	8	.....	Very good.
10	A. Lang, West Farms, Westchester County	17	1	Good.
12	James Walker, West Farms, Westchester County	7	.....	Do.
12	J. B. Underhill, cor. Lyons and Main sts., Westchester Co	1	.....	Do.
12	John Henderson, West Farms, Westchester County	7	.....	Do.
12	C. Cassens, Brooke avenue, Westchester County	1	.....	Do.
14	William Nagle, Home st. and So. Boulevard, Westchester Co.	21	1	Do.
14	M. Meorey, Oak Point, Westchester County	2	.....	Do.
14	Chris. Pressler, Westchester avenue, Westchester County	5	.....	Do.
14	Fred. Eggert, Westchester avenue, Westchester County	2	.....	Do.
14	Henry Eggert, Westchester avenue, Westchester County	16	1	Very bad.
14	William Hark, Oak Point, Westchester County	3	.....	Good.
17	P. Delaney, 155 Southern Boulevard, Westchester County	2	.....	Do.
17	Jacob Mitchell, 150th street, near Robbins avenue, N. Y.	2	.....	Do.
17	George Taylor, 150th street and Southern Boulevard, N. Y.	2	.....	Do.
17	W. White, Southern Boulevard and White's Lane, Westchester County.	3	.....	Do.
17	Peter Callan, 155th street and Southern Boulevard, N. Y	8	.....	Do.
21	M. McManus, 149th street and Trenton avenue, N. Y.	2	.....	Do.
21	A. Kullman, 859 Forest avenue, Westchester County	3	.....	Do.
	Inspections by T. J. Herr, V. S.			
Mar. 21	Fred. Bader, 168th street and Union avenue, N. Y.	11	.....	Good.
19	Metzer & Levy, 45th street and East River, N. Y.	2	.....	Do.
	Inspections made by T. J. Herr, V. S.			
20	J. Frank, 47th and East River, N. Y.	7	.....	Good.
21	A. H. Sonn, 404 E. 42d street, N. Y.	12	.....	Do.
	Inspections by W. H. Wray, V. S.			
Mar. 16	J. Moore, Union Port, Westchester County	2	.....	Good.
16	C. Bernard, Union Port, Westchester County	35	.....	Do.
16	Mr. Lewis, Union Port, Westchester County	2	.....	Do.
16	J. Duncan, Union Port, Westchester County	2	.....	Do.
16	H. Corkey, Union Port, Westchester County	23	.....	Do.
18	D. Pearsall, Westchester, Westchester County	19	.....	Do.
18	M. Delany, Westchester, Westchester County	4	.....	Do.
18	H. A. Castor, Throgg's Neck, Westchester County	2	.....	Do.
18	J. Davis, Throgg's Neck, Westchester County	3	.....	Do.

Inspections of stables, &c., in New York—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by W. H. Wray, V. S.—Continued.			
1885.				
Mar. 18	W. Damrock, Westchester, Westchester County	1	.....	Good.
18	R. Kavanagh, Throgg's Neck, Westchester County	5	.....	Do.
18	C. H. Randall, Throgg's Neck, Westchester County	1	.....	Do.
18	Mrs. Tier, Throgg's Neck, Westchester County	3	.....	Do.
19	T. McGlory, Throgg's Neck, Westchester County	4	.....	Do.
19	Miss C. L. Wolfe, Throgg's Neck, Westchester County	14	.....	Do.
19	Mr. Hemington, Throgg's Neck, Westchester County	3	.....	Do.
19	H. B. Crosby, Throgg's Neck, Westchester County	9	.....	Do.
20	John E. Morriss, Throgg's Neck, Westchester County	3	.....	Do.
20	F. C. Havemeyer, Throgg's Neck, Westchester, County	28	.....	Do.
20	Huntington, Throgg's Neck, Westchester County	8	.....	Do.
20	J. Belts, Throgg's Neck, Westchester County	19	.....	Do.
21	F. C. Havemeyer, Throgg's Neck, Westchester County	7	.....	Do.
23	R. Fredericks, Throgg's Neck, Westchester County	38	.....	Do.
23	Hugh Sunny, Throgg's Neck, Westchester County	13	.....	Do.
24	L. Spencer, Throgg's Neck, Westchester County	20	.....	Do.
24	Mr. Davidson, Throgg's Neck, Westchester County	7	.....	Do.
24	James Waterbury, Throgg's Neck, Westchester County	3	.....	Excellent.
24	Mrs. Brier, Throgg's Neck, Westchester County	12	.....	Good.
24	H. Furman, Throgg's Neck, Westchester, County	18	.....	Do.
26	Mr. Lorillard, Throgg's Neck, Westchester County	2	.....	Do.
26	J. Baxter, Pelham, Westchester County	8	.....	Do.
26	William Burk, Bronxdale, Westchester County	3	.....	Do.
26	H. Roach, Bronxdale, Westchester County	3	.....	Da.
26	J. Clure, Bronxdale, Westchester County	2	.....	Do.
27	G. Dennerlien, Bronxdale, Westchester County	1	.....	Do.
27	W. H. Deeve, Throgg's Neck, Westchester County	28	.....	Do.
28	George McRittrick, Westchester, Westchester County	36	.....	Do.
28	S. D. Odell, East Chester, Westchester County	2	.....	Do.
28	C. Zimmer, East Chester, Westchester County	8	.....	Do.
23	A. Y. Dooley, East Chester, Westchester County	2	.....	Do.
	Inspections by T. J. Herr, V. S.			
Mar. 25	Augustus Dermestan, Salisbury Mills, Orange County	26	.....	Stable, very good animals, good.
25	Loeb Bros., 47th street and East River, N. Y	17	1c.	Fair.
27	—— Marks, 47th street and East River, N. Y	5	.....	Do.
24	I. Frank, 49th street and East River, N. Y	6	.....	Good.
	Inspection by C. B. Michener, V. S.			
Mar. 24	Caleb Huntley, 602 Tinton Avenue, N. Y	3	.....	Good.
24	David Deftes, Tinton Avenue, near 151st street, N. Y	2	.....	Do.
26	A. Berger, 144th and 145th streets and Concord avenue, N. Y.	16	1	Do.
26	P. Whalen, 148th and 149th streets and Beach avenue, N. Y	2	.....	Do.
26	H. L. Morris, 490 Mott street, N. Y	1	.....	Do.
28	H. Davenport, So. Boulevard, near Brook avenue, N. Y	5	.....	Do.
28	M. J. Allen, 158th street and Mott avenue, N. Y	2	.....	Do.
28	Mrs. Sherwood, 161st street and Mott avenue, N. Y	2	.....	Do.
28	J. T. Hunt, 161st street and Mott avenue, N. Y	1	.....	Do.
28	William Phelan, 162d street and Walton avenue, N. Y	1	.....	Do.
28	Jacob Sohl, 168th street and Shendar avenue, N. Y	2	.....	Do.
31	V. Brudder, 154th street and Cedar Grove avenue, N. Y	3	.....	Do.
31	H. Watherbee, 161st street and Gerard avenue, N. Y	2	.....	Do.
31	A. Kluman, 161st street and Gerard avenue, N. Y	1	.....	Do.
31	G. McCord, 322 E. 150th street, N. Y	1	.....	Do.
Apr. 2	J. Haigh, 146th street, near Mott avenue, N. Y	1	.....	Do.
2	James Schaup, 156th street and Gerard avenue, N. Y	1	.....	Do.
2	P. Carney, 146th street and Mott avenue, N. Y	1	.....	Do.
2	C. Troble, 158th street, near Harlem avenue, N. Y	1	.....	Do.
2	J. Kaylor, 149th street and Mott avenue, N. Y	1	.....	Do.
4	W. Simpson, Hunt's Point, N. Y	46	.....	Very good.
4	M. Naylor, Home street and Southern Boulevard, N. Y	21	.....	Good.
	Inspections by W. H. Wray, V. S.			
Apr. 7	James Morgan, Pelham, Westchester County	19	.....	Stable, fair; animals, good.
7	G. A. Prevost, Pelham, Westchester County	16	.....	Good.
8	H. Jones, Pelhamville, Westchester County	11	.....	Do.
8	William Hilden, Pelhamville, Westchester County	4	.....	Do.
8	J. Case, Pelhamville, Westchester County	2	.....	Do.
8	T. Thomson, Pelhamville, Westchester County	1	.....	Do.
8	G. Willson, Pelhamville, Westchester County	1	.....	Do.

Inspections of stables, &c., in New York—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by W. H. Wray, V. S.—Continued.			
1885.				
Apr. 8	J. Todd, East Chester, Westchester County	2	.....	Good.
8	George Reynolds, Pelham, Westchester County	2	.....	Do.
8	James J. K. Johnson, Pelham, Westchester County	3	.....	Do.
10	J. Cook, East Chester, Westchester County	11	.....	Do.
10	James Mapes, East Chester, Westchester County	9	.....	Do.
10	Phil. Trot, East Chester, Westchester County	31	1c.	Stable, excellent; animals, good.
10	W. Henry, Pelhamville, Westchester County	1	.....	Good.
10	T. Hooks, Pelhamville, Westchester County	2	.....	Do.
10	H. Fowler, Pelhamville, Westchester County	2	.....	Do.
10	T. Law, Pelhamville, Westchester County	2	.....	Do.
10	B. Curran, Pelhamville, Westchester County	5	.....	Do.
10	J. Bloom, Pelhamville, Westchester County	1	.....	Do.
	Inspections by T. J. Herr, V. S.			
Apr. 18	Aug. Braun, 65th street and East River, N. Y	5	.....	Good.
	Inspections by W. H. Wray, V. S.			
Apr. 14	L. Platt, White Plains, Westchester County	7	.....	Good.
14	W. S. and A. J. Horton, White Plains, Westchester County	17	.....	Do.
14	T. Horton, White Plains, Westchester County	7	.....	Do.
14	H. Sole, White Plains, Westchester County	2	.....	Excellent.
15	Mrs. J. Rynal, Rocky Dell, Westchester County	10	.....	Do.
15	G. J. Willett, Scarsdale, Westchester County	37	.....	Good.
17	William Watson, Pelham, Westchester County	5	.....	Do.
18	E. S. Tompkins, Scarsdale, Westchester County	18	.....	Do.
18	D. Beatie, Scarsdale, Westchester County	10	.....	Do.
18	Isaac Hall, Mamaroneck, Westchester County	18	.....	Do.
20	David Burtiss, Mamaroneck, Westchester County	17	.....	Do.
20	Mr. Griffen, Mamaroneck, Westchester County	3	.....	Do.
20	J. Lynch, Mamaroneck, Westchester County	30	.....	Stable, fair; animals, good.
21	Z. A. Chivvis, Union Corners, Westchester County	3	.....	Stable, excellent; animals, good.
21	Mr. Matthews, Union Corners, Westchester County	3	.....	Stable, fair; animals, good.
21	M. Phelein, Union Corners, Westchester County	17	.....	Do.
21	A. Lapp, Union Corners, Westchester County	4	.....	Stable, good; animals, excellent.
23	J. Disbrow, Union Corners, Westchester County	2	.....	Good.
23	H. A. Kerhieffer, Upper New Rochelle, Westchester County	5	.....	Do.
23	E. D. Green, Upper New Rochelle, Westchester County	25	.....	Do.
23	H. Engel, Pelhamville, Westchester County	3	.....	Do.
24	J. J. Holler, Upper New Rochelle, Westchester County	2	.....	Do.
24	A. Mahlstedt, Upper New Rochelle, Westchester County	9	.....	Do.
24	A. E. Gunther, Upper New Rochelle, Westchester County	3	.....	Do.
24	F. J. Cazanas, Upper New Rochelle, Westchester County	12	.....	Do.
27	W. Sec, Upper New Rochelle, Westchester County	16	.....	Do.
27	H. Lester, Upper New Rochelle, Westchester County	4	.....	Stable, excellent; animals, good.
27	Mr. Trayner, Upper New Rochelle, Westchester County	25	.....	Good.
28	J. Heiselman, Cooper's Corners, Westchester County	17	.....	Do.
28	L. Disbrow, Cooper's Corners, Westchester County	18	.....	Do.
30	I. Lent, Cooper's Corners, Westchester County	13	.....	Do.
30	J. Gallaudet, Cooper's Corners, Westchester County	10	.....	Do.
30	J. Cooper, Cooper's Corners, Westchester County	5	.....	Do.
30	A. Burtiss, Cooper's Corners, Westchester County	2	.....	Do.
	Inspections by T. J. Herr, V. S.			
Apr. 25	Patrick Trophy, 449 E. 54th street, N. Y	11	.....	Stable, good; animals, fair.
25	Mrs. Brodrick, corner 54th street and Avenue A, N. Y	3	.....	Good.
25	Saint Joseph's Orphan Asylum, 89th st. and Avenue A, N. Y	6	2c.	Do.
	Inspections by C. B. Michener, V. S.			
Apr. 7	John Crelan, 158th street and Saint Nicholas avenue, N. Y	8	.....	Good.
9	Mrs. English, 37th street, near North River, N. Y	8	.....	Stable, fair; animals, good.
9	Kaufman & Straubs, 40th st. W., Eleventh avenue, N. Y	3	.....	Very good.
9	M. McGurr, 37th street, W. Eleventh avenue, N. Y	1	.....	Do.
11	John E. Devlin, 138th street and North River, N. Y	3	.....	Do.
11	M. Clancy, 165th street and Tenth avenue, N. Y	10	.....	Do.

Inspections of stables, &c., in New York—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by W. H. Wray, V. S.			
1885.				
May 2	P. Totten, New Rochelle, Westchester County	28	.....	Very good.
2	L. Jennings, New Rochelle, Westchester County	2	.....	Do.
2	W. Pateman, New Rochelle, Westchester County	1	.....	Do.
2	T. Jobson, New Rochelle, Westchester County	9	.....	Do.
4	J. Jenkins, New Rochelle, Westchester County	11	.....	Do,
4	T. Bowker, New Rochelle, Westchester County	3	.....	Do.
4	H. Harvey, New Rochelle, Westchester County	16	.....	Do.
4	Mr. Stephenson, New Rochelle, Westchester County	5	.....	Do.
4	R. Harper, New Rochelle, Westchester County	1	.....	Do.
5	B. Stillwell, New Rochelle, Westchester County	5	.....	Do.
5	H. Lawler, New Rochelle, Westchester County	1	.....	Do.
5	W. Henry, New Rochelle, Westchester County	2	.....	Do.
5	C. Ferguson, New Rochelle, Westchester County	32	.....	Do.
5	J. Jones, New Rochelle, Westchester County	2	.....	Do.
6	T. Degnan, Mamaroneck, Westchester County	4	.....	Good.
6	H. Newman, Mamaroneck, Westchester County	2	.....	Do.
6	J. Tompkins, Mamaroneck, Westchester County	3	.....	Do.
6	H. Noonan, Mamaroneck, Westchester County	16	.....	Do.
6	G. Frazier, Mamaroneck, Westchester County	8	.....	Do.
7	William Martine, Mamaroneck, Westchester County	8	.....	Do.
7	G. Howell, Mamaroneck, Westchester County	14	.....	Do.
7	I. Smith, Mamaroneck, Westchester County	2	.....	Do.
7	W. Henshaw, Mamaroneck, Westchester County	18	.....	Do.
9	Thomas Wilds, Mamaroneck, Westchester County	15	.....	Do.
9	O. Havey, Mamaroneck, Westchester County	7	.....	Do.
9	C. V. Hoagland, Mamaroneck, Westchester County	2	.....	Do.
9	A. Hawley, Mamaroneck, Westchester County	11	.....	Do.
9	P. Metcalf, Mamaroneck, Westchester County	1	.....	Do.
9	H. Somers, Mamaroneck, Westchester County	2	.....	Do.
	Inspections by T. J. Herr, V. S.			
May 2	C. Amman, 266 W. 131st street	1	.....	Good.
21	C. P. Allaire, 605 W. 59th street	1	.....	Do.
21	Kellogg & Co., 605 W. 59th street	1	.....	Stable, fair; animals, good.
23	William Erath, 73d street, bet. Avenues A and First, N. Y.	6	1c.	Good.
23	Meyer Loeb, 73d street and East River, N. Y.	4	.....	Stable, fair; animals, good.
23	Jacob Strauss, 73d street and East River, N. Y.	5	.....	Do.
23	A. Rheinheimer, 73d street and East River, N. Y.	7	.....	Do.
23	Charles Pregor, corner 92d street and Third avenue, N. Y.	7	.....	Good.
23	John H. Hackman, 1453 Avenue A, N. Y.	2	.....	Do.
23	M. Gleason, 73d street, near Avenue A, N. Y.	1	.....	Do.
23	James Wigmore, 73d street, bet. Avenues A and First, N. Y.	1	.....	Do.
23	A. Randaulph, 73d street, near Avenue A, N. Y.	.....	.....	Do.
23	Mrs. E. Mahr, 73d street, corner First avenue, N. Y.	2	.....	Do.
23	Patrick King, 295 E. 98th street, N. Y.	18	.....	Do.
June 6	Bernard H. Mohlenhoff, 74th street and W. Boulevard, N. Y.	1	.....	Do.
6	J. Carroll, 75th street and Riverside Drive, N. Y.	10	.....	Do.
6	W. O'Brien, 79th street and Riverside Drive, N. Y.	20	3	Stable, good; animals, fair.
	Inspections by L. McLean, V. S.			
June 4	Michael Clancy, Flatbush, Kings County	30	10	Bad.
9	S. V. Seaman, Brooklyn, Kings County	5	.....	Fair.
9	John Miller, Brooklyn, Kings County	7	2	Stable, very bad; animals, fair.
11	Mrs. Conroy, Flatbush, Kings County	5	2	Fair.
13	Ronald McDonald, Brooklyn, Kings County	22	2	Stable, bad; animals, fair.
13	J. Hetch, 172 Delancey street, N. Y.	5	.....	Good.
13	B. Kurz, 77th street and East River, N. Y.	6	.....	Do.
13	—— Stack, 77th street and East River, N. Y.	1	.....	Do.
	Inspections by T. J. Herr, V. S.			
June 20	L. Oppenheimer, 607 12th street, N. Y.	1	.....	Good.
20	Marcus Rosenthal, 365 3d street, N. Y.	3	.....	Fair.
20	Adam Crownhardt, 710 E. 13th street, N. Y.	1	.....	Good.
20	John Rheinfrank, corner 3d and Goerck streets, N. Y.	2	.....	Fair.
27	Loeb Bro., 47th street and East River, N. Y.	8	.....	Good.
27	Fritz Oppermann, 329 E. 45th street, N. Y.	.....	.....	Stable, fair; animals, good.
27	Joe Armelli, 107th and East River, N. Y.	3	.....	Good.

Inspections of stables, &c., in New York—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by T. J. Herr, V. S.—Continued.			
1885.				
June 27	Garoum Carbage, 107th and East River, N. Y	3	.....	Stable, fair; animals, good.
27	—— Marks, 47th and East River, N Y	6	.....	Good.
27	George Ehret, 92d, between Second and Third avenues, N. Y.	5	.....	Do.
	Inspections by O. B. Michener, V. S.			
June 25	Fred. Bader, 168th Union avenue, N. Y	11	.....	Good.
25	Kaufman & Strauss, 40th st., W. of Eleventh avenue, N. Y	2	.....	Do.
27	Jos. Schwab, 148th and Robbins avenue, N. Y	22	2	Do.
30	Wm. Blamneram, bet. 152d and 153d sts. and Bergen ave., N. Y.	50	.....	Do.
July 2	Mrs. Decker, 613 E. 159th street, N. Y	3	.....	Very good.
2	Mrs. Dennerlin, 645 E. 160th street, N. Y	23	1	Good.
2	M. Reme, 530 E. 151st street, N. Y	2	.....	Do.
4	S. McClintock, 102d street and New avenue, N. Y	12	.....	Do.
4	P. Oslon, 523 E. 148th street, N. Y	22	2	Do.
7	James McLaughlin, 518 E. 150th street, N. Y	11	.....	Do.
7	J. Smith, 449 E. 146th street, N. Y	25	1	Do.
9	M. G. Eissman, Rose street and Bergen avenue, N. Y	15	2	Fair.
9	Thomas Cramer, 467 E. 152d street, N. Y	8	.....	Good.
10	John J. O'Brien, 79th street and Tenth avenue, N. Y	19	5	Stable, good; animals, poor.
10	Dr. Nichols, 117th street and Boulevard, N. Y	35	1	Very good.
10	"Public pound," 139th street and Tenth avenue, N. Y	1	1	Clean.
11	T. K. Kearney, Southern Boulevard and Spring street, N. Y	18	.....	Very good.
11	H. Eggert, Prospect and Westchester avenues, N. Y	16	3	Stable, dirty; animals, fair.
	Inspections by T. J. Herr, V. S.			
July 11	George Schmidt, 90th street and Avenue A, N. Y	17	2	Good.
11	—— Colman, 88th street, near Fourth avenue, N. Y	8	.....	Do.
11	Mrs. Lynch, 89th street, near Fifth avenue, N. Y	18	.....	Do.
11	Jos. O'Connor, 89th street, near Fifth avenue, N. Y	18	1	Do.
11	Saint Joseph's Orphan Asylum, 89th st., and Avenue A, N.Y.	6	.....	Do.
11	S. Reilly, 88th street and Fourth avenue, N. Y	7	.....	Do.
	Inspections by O. B. Michener, V. S.			
July 13	A. Berger, 145th street and Concord avenue, N. Y	16	2	Good.
13	H. Davenport, Boulevard and Brook avenue, N. Y	5	.....	Very good.
14	Mrs. English, 37th street, near North River, N. Y	8	1	Good.
14	M. Clancey, 165th street, near Tenth avenue, N. Y	10	.....	Do.
16	W. Simpson, Hunt's Point, N. Y	47	.....	Do.
17	Mrs. Gaer, 148th street and Seventh avenue, N. Y	11	2	Do.
17	Mrs. Clancey, bet. 155th and 156th sts. and Tenth avenue, N. Y.	11	.....	Do.
18	Dennis McMann, 149th street and Eighth avenue, N. Y	12	.....	Fair.
18	G. Yostpill, 305 W. 141st street, N. Y	6	.....	Good.
20	H. Drennon, 210th street and Kingsbridge road, N. Y	34	2	Very good.
21	John Corbett, 207th street and Kingsbridge road, N. Y	26	.....	Good.
21	William Brady, 184th street and Kingsbridge road, N. Y	2	.....	Do.
23	J. White, 213th street and Kingsbridge road	16	.....	Do.
23	M. Mather, 210th and Cooper streets, N. Y	4	.....	Do.
24	John Allen, 125th street and Ninth avenue, N. Y	10	.....	Stable, unclean; animals, fair.
24	M. Duffy, 133d street and Saint Nicholas avenue, N. Y	6	.....	Good.
25	A. Siegwort, 538 W. 40th street, N. Y	7	.....	Do.
25	F. Paulus, 150th street near College avenue, N. Y	9	.....	Do.
27	T. Clark, 147th street and Brook avenue, N. Y	7	.....	Do.
27	Ellen Callahan, 146th and 147th streets and Brook ave., N. Y.	4	.....	Do.
27	P. Scanlan, 146th and 147th streets and Brook avenue, N. Y.	3	.....	Do.
28	M. Forley, 144th street and Brook avenue, N. Y	10	.....	Do.
28	Jos. Loehr, 458 E. 151st street, N. Y	13	.....	Do.
29	T. T. Harvey, 136th street east of Third avenue, N. Y	14	1	Do.
29	T. Crane, 135th street and Third avenue, N Y	6	.....	Do.
29	Mrs. Widder, 163d street and Courtlandt avenue, N. Y	11	.....	Do.
30	C. Paulus, 141st street and East River, N. Y	30	.....	Do.
31	H. Brindle, 755 E. 162d street, N. Y	14	.....	Do.
31	George Werstadt, 670 E. 153d street, N. Y	6	2	Do.
31	M. Tuckenbiodt, 705 E. 165th street, N. Y	9	1	Do.
	Inspections by T. J. Herr, V. S.			
July 18	John Kress, 224 E. 54th street, N. Y	1	.....	Stable, good; animals, fair.
18	Jacob Hoffman, 214 E. 54th street, N. Y	1	.....	Good.

Inspections of stables, &c., in New York—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by T. J. Herr, V. S.—Continued.			
1885.				
July 18	Jos. Dolgner Sons, 226 E. 54th street, N. Y	1	.....	Good.
18	Unknown, 121 E. 87th street, N. Y	1	1	Stable, good; animals, poor.
25	Isaac Frank, 49th street and East River, N. Y	6	.....	Good.
25	Dan Kane, 42d street, near First avenue, N. Y	2	.....	Do.
25	A. H. Sonn, 402 E. 42d street, N. Y	9	.....	Do.
Aug. 1	House of Good Shepherd, 91st street and Avenue A, N. Y	...	.....	
1	J. Hetch, 172 Delancey street, N. Y	5	.....	Do.
1	H. Elias, 409 E. 54th street, N. Y	...	.....	Do.
15	Pat Dean, 68th street and East River, N. Y	11	.....	Do.
15	Thomas Hurten, 71st street, bet. First and Second aves., N. Y.	8	.....	Stable, fair; animals, good.
15	W. Grogen, 502 E. 71st street, N. Y	10	.....	Stable, fair; animals, good.
22	Mary Furdein, 425 E. 71st street, N. Y	...	.....	
22	F. Connolly, 547 W. 37th street, N. Y	1	.....	Good.
22	Maggie Welch, 435 E. 71st street, N. Y	3	.....	Do.
22	Montobeck, 439 E. 71st street, N. Y	...	.....	
22	E. Sheehen, 317 E. 64th street, N. Y	8	.....	Do.
24	S. Tompkins, Greenburg, Westchester County	12	4	Stable, good; animal, fair.
24	J. H. Sniffen, Greenburg, Westchester County	17	1	Good.
29	Joe Levy, 116th street between Fifth and Sixth aves., N. Y.	2	.....	
29	John Burns, 98th street and East River, N. Y	3	.....	Do.
29	Thomas Cavin, 351 E. 99th street, N. Y	17	.....	Do.
29	John McDermott, 347 E. 99th street, N. Y	14	.....	Do.
29	—— King, 295 E. 99th street, N. Y	12	.....	Stable, good; animals, fair.
Sept. 2	Pat McCabe, 72d street and East River, N. Y	4	.....	Fair.
2	Mrs. Buckley, 73d street and East River, N. Y	...	.....	
5	—— Maloney, 222 E. 6th street, N. Y	1	.....	Stable, very good; animals, good.
5	G. Slick, 327 Delancey street, N. Y	5	.....	Good.
5	J. Hetch, 327 Delancey street, N. Y	6	.....	Stable, good; animals fair.
5	A. Crownhardt, 605 E. 13th street, N. Y	1	.....	Good.
9	I. Frank, 49th street and East River, N. Y	6	.....	Do.
9	Levy & Metzer, 45th street and East River, N. Y	1	.....	Do.
9	Henry Newman, 321 E. 63d street, N. Y	1	.....	Do.
9	John Long, 408 60th street, N. Y	...	.....	
12	—— Brownfleck, 103d street and First avenue, N. Y	3	.....	Do.
12	S. Crouse, 103d street and East River, N. Y	1	.....	Fair.
12	A. Muller 321 E. 103d street, N. Y	8	.....	Good.
12	Mrs. M. Leonard, 319 E. 103d street, N. Y	7	1c.	Do.
12	John Distella, 103d street and Second avenue, N. Y	5	.....	Do.
14	Wm. Blumenhaurer, Bergen ave. bet. 152d and 153d sts., N. Y.	51	4	Stable, good; animals, fair.
16	M. Geisman, 152d street and Bergen avenue, N. Y	17	.....	Stable, good; animals, fair.
16	Gus Getinger, 151st street and Bergen avenue, N. Y	6	.....	Do.
16	H. Brandley, 162d street and Brook avenue, N. Y	13	.....	Good.
19	Mary Corbetts, 421 E. 120th street, N. Y	2	.....	Stable, fair; animals, good.
19	B. Stahl, 120th street and Pleasant avenue, N. Y	11	.....	Good.
23	John McGee, 105th street near First avenue, N. Y	1	1	Stable, good; animals, poor.
23	H. Haase, 105th street and East River	9	1c.	Fair.
23	Colman, 104th street and East River, N. Y	...	.....	Do.
23	G. Katz, First avenue between 105th and 106th streets, N. Y.	3	.....	Good.
26	Mrs. M. Shea, 94th street and Madison avenue, N. Y	3	.....	Do.
26	D. T. Murphy, 92d street and Fifth avenue, N. Y	10	2	Stable, good; animals, fair.
26	John Cunningham, 94th street and Madison avenue, N. Y	7	.....	Good.
26	M. D. Duffy, 96th street and Fourth avenue, N. Y	7	.....	Do.
26	J. Regan, Fourth avenue between 96th and 97th streets, N. Y.	12	.....	Stable, fair; animals, good.
Oct. 3	Walter Taylor, 1482 Lexington avenue, N. Y	1	.....	Do.
3	Ed. Karner, 1482 Lexington avenue, N. Y	7	.....	Good.
3	M. Smith, 1478 Lexington avenue, N. Y	8	.....	Fair.
7	Mic. Englehardt, 94th street and First avenue, N. Y	17	.....	Do.
7	George Schmidt, 92d street and First avenue, N. Y	8	.....	Good.
7	Charles Rieger, 92d street and First avenue, N. Y	15	.....	Fair.
7	Pat King, 98th street between Second and Third aves., N. Y.	5	.....	Animals, fair.
10	D. T. Murphy, 92d streets and Fifth avenue, N. Y	20	.....	Good.
10	Mrs. M. Lynch, 16 E. 89th street, N. Y	9	.....	Do.

Inspections of stables, &c., in New York—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by T. J. Herr, V. S.—Continued.			
1885.				
Oct. 10	S. Rielly, 58 E. 89th street, N. Y	6	.....	Stable, fair; animals, good.
10	J. Colman, 60 E. 89th street, N. Y	....	.....	Good.
10	John O'Connor, 20 E. 89th street, N. Y	19	.....	Stable, good; animals, fair.
14	Mrs. Widon, 163d street and Brook avenue, N. Y	10	.....	Good.
14	Mrs. Fleishman, 164th street and Courtlandt avenue, N. Y	2	.....	Stable, good; animals, fair.
14	James Ward, 684 E. 163d street, N. Y	8	.....	Good.
14	H. Brandley, 163d street and Brook avenue, N. Y	15	.....	Do.
22	Charles Rieger, 92d street and Third avenue, N. Y	8	.....	Do.
22	Jacob Ruppert, Fifth avenue, bet. 92d and 93d streets, N. Y	1	.....	Do.
22	D. T. Murphy, 92d street and Fifth avenue, N. Y	11	.....	Do.
23	Reuben Satenstein, Bronxdale Westchester County	93	3	Fair.

Inspections at slaughter-houses, offal docks, and stock-yards.

	Inspections by C. B. Michener, V. S.			
1884.				
Dec. 22	Union Stock-Yards, 60th street and North River, N. Y	....	.....	Good.
24	.....do	....	.....	Do.
26	.....do	....	.....	Do.
29	.....do	....	.....	Do.
31	.....do	....	.....	Do.
	Inspections by Thomas J. Herr, V. S.			
Dec. 29	Slaughter-house, 45th street near First avenue, N. Y	3	1	
29	Slaughter-house, 47th street near First avenue, N. Y	7	.....	
29	Slaughter-house, First ave., bet. 45th and 46th streets, N. Y	4	.....	
29	Slaughter-house, 97th street, bet. Ninth and Tenth aves., N. Y	1	1	
30	Slaughter-house, 60th street yard, N. Y	1	.....	
30	Slaughter-house, First ave., bet. 45th and 46th streets, N. Y	12	.....	
30	Slaughter-house, 47th street near First avenue, N. Y	1	.....	
31	.....do	5	.....	
31	Slaughter-house, 417 E. 74th street, N. Y	1	1	
31	Slaughter-house, 45th street near First avenue, N. Y	2	.....	
1885.				
Jan. 1	Slaughter-house, 177th street and Moore avenue, N. Y	1	.....	
2	Union-Stock-Yards, 60th street and North River, N. Y	....	.....	
2	Slaughter-house, 302 Mott street, N. Y	1	.....	
2	Slaughter-house, First ave. bet. 45th and 46th streets, N. Y	1	.....	
2	Slaughter-house, 47th street near First avenue, N. Y	1	.....	
3	Slaughter-house, 135th street and Lexington avenue, N. Y	1	1	
	Inspections by Rowland & Hawk, V. S.			
Jan. 2	Jersey City Stock-Yards, Jersey City Hudson County	....	1	Good.
6	.....do	....	.....	Do.
	Inspections by C. B. Michener, V. S.			
Jan. 5	Union Stock-Yards, 60th street and North River, N. Y	....	.....	Stables, good; animals, fair.
7	.....do	....	.....	Stables, good; animals, poor.
9	.....do	....	.....	Stables, good; animals, fair.
	Inspections by T. J. Herr, V. S.			
1885.				
Jan. 5	Offal dock, 60th street yards, N. Y	1	.....	
6	Offal dock	....	.....	
7	Offal dock, 163d street and Forest Lane, N. Y	1	.....	
8	Offal dock	3	.....	
9	Offal dock, the dock, N. Y	....	.....	
10	.....do	....	.....	
5	Slaughter-houses, 45th street, near First avenue, N. Y	4	1	
5	Slaughter-houses, 44th street, near First avenue, N. Y	1	.....	
5	Slaughter-houses, 47th street, near First avenue, N. Y	14	2	
5	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y	27	.....	
6	Slaughter-houses, 45th street, near First avenue, N. Y	1	.....	
6	Slaughter-houses, 47th street, near First avenue, N. Y	3	.....	

Inspections at slaughter-houses, offal-docks, and stock-yards—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition
	Inspection by T. J. Herr, V. S.—Continued.			
1885.				
Jan. 6	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	9	.....	
7	Slaughter-houses, 47th street, near First avenue, N. Y	1	.....	
7	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	11	.....	
8	Slaughter-houses, 45th street, near First avenue, N. Y.	2	.....	
8	Slaughter-houses, 47th street, near First avenue, N. Y.	11	1	
9	Slaughter-houses, First avenue bet. 45th and 46th sts., N. Y.	20	.....	
10	Slaughter-houses	....	.....	
	Inspections by Rowland & Hawk, veterinary surgeons.			
Jan. 15	Stock-yards, Jersey City, Hudson County	....	.....	Good.
	Inspections by O. B. Michener, V. S.			
Jan. 12	Union Stock-yards, 60th street and North River, N. Y.	....	.....	
14	.....do	....	.....	Good.
	Inspections by T. J. Herr, V. S.			
Jan. 16	Union Stock-yards, 60th street and North River, N. Y	....	.....	Bad.
12	Offal dock, 89th street and Avenue A, N. Y	1	.....	
13	Offal dock, 141st street and Port Morris, N. Y.	8	.....	
14	Offal dock, on the dock, N. Y	....	.....	
15	.....do	....	.....	
16	Offal dock, Riverdale avenue, N. Y	1	.....	
17	Offal dock, on the dock, N. Y	....	.....	
12	Slaughter-houses, 49th st., near First avenue, N. Y	4	1	
12	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	30	.....	
12	Slaughter-houses, 46th street, near First avenue, N. Y.	11	.....	
12	Slaughter-houses, 47th street, near First avenue, N. Y.	8	2	
13	Slaughter-houses, 45th street, near First avenue, N. Y.	7	.....	
13	Slaughter-houses, 47th street, near First avenue, N. Y.	4	.....	
13	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	1	.....	
14	Slaughter-houses, 46th street, near First avenue, N. Y.	14	.....	
14	Slaughter-houses, 47th street, near First avenue, N. Y.	17	.....	
14	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	2	.....	
15	Slaughter-houses, 45th street, near First avenue, N. Y.	12	.....	
15	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	17	.....	
15	Slaughter-houses, 47th street, near First avenue, N. Y	5	.....	
16	Slaughter-houses, 45th street, near First avenue, N. Y.	3	.....	
16	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	....	.....	
17	Slaughter-houses	....	.....	
19	Slaughter-houses, 45th street, near First avenue, N. Y.	4	1	
19	Slaughter-houses, 47th street, near First avenue, N. Y.	14	3	
19	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	22	.....	
20	..... do	52	1	
20	Slaughter-houses, 45th street, near First avenue, N. Y.	9	1	
21	..... do	17	1	
21	Slaughter-houses, 47th street, near First avenue, N. Y.	9	1	
21	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	8	.....	
22	Slaughter-houses, 45th street, near First avenue, N. Y.	4	.....	
22	Slaughter-houses, 47th street, near First avenue, N. Y.	23	2	
22	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	36	.....	
23	.....do	6	.....	
24	Slaughter-houses	....	.....	
19	Offal dock, 6th street, N. Y	1	.....	
20	Offal dock, New avenue and 102d street, N. Y	1	1	
21	Offal dock, Dashes Farm	1	.....	
21	Offal dock, Central Park, N. Y	1	.....	
22	Offal dock, 117th street and Fifth avenue, N. Y	1	.....	
23	Offal dock, 1344 Avenue A., N. Y	1	.....	
24	Offal dock, Courtlandt avenue and 159th street, N. Y	1	.....	
26	Slaughter-houses, 47th street, near First avenue, N. Y.	3	.....	
26	Slaughter-houses, 45th street, near First avenue, N. Y.	3	.....	
26	Slaughter-houses, First avenue, bet 45th and 46th sts., N. Y.	20	.....	
27	.....do	4	.....	
27	Slaughter-houses, 47th street, near First avenue, N. Y.	5	3	
28	.....do	13	2	
28	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y	4	.....	
29	Slaughter-houses, 47th street, near First avenue, N. Y.	11	1	
30	Slaughter-houses	....	.....	
31	.....do	....	.....	
26	Offal dock, the dock, N. Y	....	.....	
27	.....do	....	.....	
28	.....do	....	.....	
29	.....do	....	.....	

Inspections at slaughter-houses, offal docks, and stock-yards—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by T. J. Herr, V. S.—Continued.			
1885.				
Jan. 30	Offal dock, 60th street, stock-yard, N. Y	....	1	
31	.....do	....	1	
	Inspections by C. B. Michener, V S.			
Feb. 2	Slaughter-houses, 60th street and North River, N. Y	....	1	Good.
4	.....do	....	3	Do.
6	.....do	....	.....	Do.
	Inspections by Thomas J. Herr, V. S.			
Feb. 2	Slaughter-houses, 45th street and First avenue, N. Y	1	.....	
2	Slaughter-houses, 47th street and First avenue, N. Y	26	4	
2	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y	10	.....	
3	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y	15	.....	
3	Slaughter-houses, 47th street and First avenue, N. Y	15	2	
4	.....do	26	2	
4	Slaughter-houses, 45th street and First avenue, N. Y	10	1	
4	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y	15	.....	
5	Slaughter-houses, 47th street, near First avenue, N. Y	15	.....	
6	Slaughter-houses	....	.....	
7	.....do	....	.....	
2	Offal dock, 60th street yard, N. Y	1	.....	
3	Offal dock, 107th street and East River, N. Y	1	.....	
4	Offal dock, 97th street and Eleventh avenue, N. Y	1	.....	
5	Offal dock, 246th E. 116th street, N. Y	1	.....	
6	Offal dock, 213th street and Kingsbridge road, N. Y	2	.....	
7	Offal dock, 135th street and Saint Nicholas avenue, N. Y	1	.....	
9	Slaughter-houses, 45th street, near First avenue, N. Y	1	.....	
9	Slaughter-houses, 47th street, near First avenue, N. Y	14	.....	
10	Slaughter-houses, First avenue, bet. 45th and 46 sts., N. Y	10	.....	
11	Slaughter-houses, 47th street, near First avenue, N. Y	21	1	
11	Slaughter-houses, 45th street, near First avenue, N. Y	9	.....	
12	Slaughter-houses, 47th street, near First avenue, N. Y	22	3	
12	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y	16	1	
13	Slaughter-houses, 47th street, near First avenue, N. Y	4	1	
14	Slaughter-houses	....	.....	
9	Offal dock, 109th street and Broadway, N. Y	1	.....	
10	Offal dock, 60th street stock-yard, N. Y	1	.....	
11	.....do	1	.....	
12	Offal dock, 318 Pleasant avenue, N. Y	1	.....	
13	Offal dock, 165th street and Hundsonpoint road, N. Y	1	.....	
14	Offal dock	....	.....	
	Inspections by Rowland & Hawk, V. S.			
Feb. 11	Stock-yards, Jersey City, Hudson County	....	.....	Good.
	Inspections by C. B. Michener, V. S.			
Jan. 19	Union Stock-Yards, 60th street and North River, N. Y	....	.....	Good.
21	.....do	....	.....	Stables, good; animals, fair.
23	.....do	....	.....	Good.
26	.....do	....	.....	Do.
28	.....do	....	.....	Stables, good; animals, fair.
30	..... do	....	.....	Stables, good; animals, average.
Feb. 9	.....do	....	.....	Good.
11	.....do	....	2c.	Do.
13	.....do	....	.....	Do.
16	.....do	....	.....	Do.
18	.....do	....	1	Do.
20	.....do	....	2	Stables, bad; animals, good.
11	Stock-yards, Jersey City, Hudson County	....	.....	Good.
19	Union Stock-Yards, 60th street and North River, N. Y	....	.....	Do.
21	.....do	....	.....	Stables, good; animals, fair.
23	.....do	....	.....	Good.
26	.....do	....	.....	Do.
28	.....do	....	.....	Stables, good; animals, fair.
30	Slaughter-houses, 45th street and First avenue, N. Y	3	.....	Stables, good; animals, average.

Inspections at slaughter-houses, offal docks, and stock-yards—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Thomas J. Herr, V. S.			
1885.				
Feb. 16	Slaughter-houses, 47th street and First avenue, N. Y	30	2	
16	Slaughter-houses, First ave., bet. 45th and 46th sts., N. Y	6	.....	
16	Slaughter-houses, 45th street and First avenue, N. Y	1	.....	
17	Slaughter-houses, 47th street and First avenue, N. Y	26	.....	
17	Slaughter-houses, First avenue, bet. 45th and 46th sts., N Y.	23	.....	
17	Slaughter-houses, 47th street and First avenue, N. Y	23	1	
18	Slaughter-houses, cattle at Poughkeepsie killed	....	.....	
19	.....do	....	.....	
20	.....do	....	.....	
21	.....do	....	.....	
16	Offal dock, Woodruff avenue, N. Y	1	.....	
17	Offal dock, the dock, N. Y	....	.....	
18	.....do	....	.....	
19	.....do	....	.....	
20	.....do	....	.....	
21	.....do	....	.....	
	Inspections by C. B. Michener, V. S.			
Feb. 23	Union Stock-Yards, 60th street and North River, N. Y	....	.....	Stables, fair; animals, good.
25	.....do	....	1c.	Do.
27	.....do	....	.....	Do.
	Inspections by Thomas J. Herr, V. S.			
Feb. 23	Slaughter-houses, 45th street and First avenue, N. Y	4	1	
23	Slaughter-houses, 47th street and First avenue, N. Y	12	.....	
23	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	12	.....	
24	Slaughter-houses, 47th street and First avenue, N. Y	3	.....	
24	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	22	.....	
25	Slaughter-houses, 45th street and First avenue, N. Y	3	.....	
25	Slaughter-houses, 47th street and First avenue, N. Y	32	2	
26	Slaughter-houses, 45th street and First avenue, N. Y	1	.....	
26	Slaughter-houses, 47th street and First avenue, N. Y	4	.....	
27	Slaughter-houses, 45th street and First avenue, N. Y	1	.....	
27	Slaughter-houses, 47th street and First avenue	3	.....	
27	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	5	.....	
28	No cows killed	....	.....	
23	Offal dock, Taylor Place, N. Y	1	.....	
24	Offal dock, the dock, N. Y	....	.....	
25	.....do	....	.....	
26	.....do	....	.....	
27	.....do	....	.....	
28	.....do	....	.....	
	Inspections by C. B. Michener, V. S.			
Mar. 2	Slaughter-house, 60th street and North River, N. Y	....	.....	Fair.
4	.....do	....	.....	Stables, fair; animals, good.
6	.....do	....	1c.	Do.
	Inspections by T. J. Herr, V. S.			
Mar. 2	Slaughter-houses, 45th street, near First avenue, N. Y	5	.....	
2	Slaughter-houses, 47th street, near First avenue, N. Y	8	2	
2	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	9	.....	
3	Slaughter-houses, 47th street, near First avenue, N. Y	4	1	
3	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	6	.....	
4	Slaughter-houses, 47th street, near First avenue, N. Y	23	3	
4	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	5	.....	
5	Slaughter-houses, 45th street, near First avenue, N. Y	2	2	
6	Slaughter-houses, 47th street, near First avenue, N. Y	3	.....	
7	Slaughter-houses	....	.....	
2	Offal dock, 114th street, bet. Second and Third aves., N. Y	1	.....	
3	Offal dock, 60th street stock-yard, N. Y	1	.....	
4	Offal dock, Van Courtlandt Farm, N. Y	1	.....	
5	Offal dock, the dock, N. Y	....	.....	
6	.....do	....	.....	
7	Offal dock, 154th street and Saint Ann's avenue, N. Y	1	.....	
	Inspections by C. B. Michener, V. S.			
Mar. 9	Union Stock-Yards, 60th street and North River, N. Y	...	.....	Good.
11	.....do	...	1	Fair.

Inspections at slaughter-houses, offal docks, and stock-yards—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition
	Inspections by T. J. Herr, V. S.			
1885.				
Mar. 13	Union Stock-Yards, 60th street and North River, N. Y	....	1	Fair.
9	Slaughter-houses, 45th street, near First avenue, N. Y	12	1	
9	Slaughter-houses, 47th street, near First avenue, N. Y	5	.....	
10	....do	3	1	
11	Slaughter-houses, 45th street, near First avenue, N. Y	2	.....	
11	Slaughter-houses, 47th street, near First avenue, N. Y	10	1	
12	Slaughter-houses, 45th street, near First avenue, N. Y	1	1	
12	Slaughter-houses, 47th street, near First avenue, N. Y	15	2	
12	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	19	3	
13	Slaughter-houses, 45th street, near First avenue, N. Y	1	.....	
13	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	3	.....	
14	Slaughter-houses	....	.....	
9	Offal dock, W. 68th st., bet. Eighth and Ninth aves., N. Y	1	.....	
10	Offal dock, on the dock	....	.....	
11	Offal dock, Thomas and Sandoford streets, N. Y	1	1	
12	Offal dock, 144th street, bet. Second and Third avenues, N. Y.	1	.....	
13	Offal dock, on the dock, N. Y	....	.....	
14	Offal dock, 60th street stock-yards, N. Y	1	.....	
	Inspections by C. B. Michener, V. S.			
Mar. 16	Slaughter-houses, 60th street and North River, N. Y	....	1	Fair.
20	....do	..	.....	Stables, unclean; animals, good.
	Inspections by T. J. Herr, V. S.			
Mar. 16	Slaughter-houses, 47th street and First avenue, N. Y	10	1	
17	Slaughter-houses, 45th street and First avenue, N. Y	2	.....	
17	Slaughter-houses, 47th street and First avenue, N. Y	1	.....	
17	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	11	.....	
18	Slaughter-houses, 45th street and First avenue, N. Y	1	.....	
18	Slaughter-houses, 47th street and First avenue, N. Y	6	1	
18	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	5	.....	
19	Slaughter-houses, 45th street and First avenue, N. Y	2	.....	
19	Slaughter-houses, 45th street and East River, N. Y	1	.....	
19	Slaughter-houses, 47th street and First avenue, N. Y	22	5	
20	....do	3	1	
21	Slaughter-houses	....	.....	
16	Offal dock, 60th street stock-yards, N. Y	1	.....	
17	Offal dock, the dock, N. Y	....	.....	
18	....do	....	.....	
19	....do	....	.....	
20	Offal dock, 60th street stock-yard, N. Y	....	.....	
21	Offal dock, 166 E. 68th street, N. Y	....	.....	
23	Slaughter houses, 47th street and First avenue, N. Y	4	1	
24	....do	9	2	
24	Slaughter-houses, 45th street, near First avenue, N. Y	18	.....	
25	Slaughter-houses, 45th street and East River, N. Y	1	1	
25	Slaughter-houses, 45th street, near First avenue, N. Y	8	.....	
25	Slaughter-houses, 47th street, near First avenue, N. Y	21	3	
25	Slaughter-houses, First avenue bet. 45th and 46th sts., N. Y.	14	1	
26	....do	8	.....	
26	Slaughter-houses, 47th street, near First avenue, N. Y	12	.....	
26	Slaughter-houses, 45th street, near First avenue, N. Y	8	1	
27	....do	8	1	
27	Slaughter-houses, 47th street, near First avenue, N. Y	4	.....	
28	No cattle killed	....	.....	
23	Offal dock, 125th street and Boulevard, N. Y	1	.....	
23	Offal dock, 82d street and Boulevard, N. Y	1	.....	
24	Offal dock, 161st street and Third avenue, N. Y	1	.....	
25	Offal dock, the dock	1	.....	
26	Offal dock, 81st street, bet. 9th and 10th streets, N. Y	....	.....	
27	Offal dock, Albany avenue and Kingsbridge road, N. Y	1	.....	
28	Offal dock, Morris avenue and 161st street, N. Y	1	.....	
	Inspections by C. B. Michener, V. S.			
Mar. 23	Slaughter-houses, 60th street and North River, N. Y	....	.....	Stables, bad; animals, good.
25	....do	....	2	Stables, fair; animals, good.
27	....do	....	1	Stables, bad; animals, fair.
30	....do	....	1	Stables, dirty; animals, fair.

Inspections at slaughter-houses, offal docks, and stock-yards—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by C. B. Michener, V. S.—Continued.			
1885.				
Apr. 1	Slaughter-houses, 60th street and North River, N. Y.	....	.....	Stables, bad; animals, fair.
3	.....do	...	.....	Fair.
Mar. 30	Slaughter-houses, 45th street, near First avenue, N. Y	9	.....	
30	Slaughter-houses, 47th street, near First avenue, N. Y	22	3	
	Inspections by T. J. Herr, V. S.			
Mar. 31	Slaughter-houses	...	.....	
Apr. 1	Slaughter-houses, 47th street, near First avenue, N. Y	9	1	
2	Slaughter-houses, 45th street and East River, N. Y.	1	.....	
2	.....do	9	1	
2	Slaughter-houses, 47th street and East River, N. Y.	15	2	
2	.....do	3	.....	
3	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	1	.....	
3	Slaughter-houses, 45th street, near First avenue, N. Y.	2	.....	
3	Slaughter-houses, 47th street, near First avenue, N. Y.	2	.....	
4	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	...	.....	
Mar. 30	Offal dock, 174th street and Morris avenue, N. Y.	1	1	
31	Offal dock, 161st street and Kingsbridge road, N. Y.	1	.....	
Apr. 1	Offal dock, 112th street and Madison avenue, N. Y.	1	.....	
2	Offal dock, 182d street and Terbuts avenue, N. Y	1	.....	
3	Offal dock, 97th street and Transverse road, N. Y.	1	1	
4	Offal dock, Morningside avenue and 114th street, N. Y	1	.....	
6	Slaughter-houses, 45th street and First avenue, N. Y	4	.....	
6	Slaughter-houses, 47th street and First avenue, N. Y	1	.....	
6	Slaughter-houses, First avenue bet. 45th and 46th sts., N. Y.	1	.....	
7	Slaughter-houses, 45th street, near First avenue, N. Y.	16	2	
7	Slaughter-houses, 47th street, near First avenue, N. Y.	15	4	
8	Slaughter-houses, 45th street, near First avenue, N. Y.	26	2	
8	Slaughter-houses, 47th street, near First avenue, N. Y.	19	1	
9	.....do	17	1	
9	Slaughter-houses, 45th street, near First avenue, N. Y.	15	2	
9	Slaughter-houses, 44th street and East River, N. Y.	2	.....	
10	Slaughter-houses, 45th street, near First avenue, N. Y.	1	.....	
10	Slaughter-houses, 47th street, near First avenue, N. Y.	2	1	
11	No cows killed	...	.....	
6	Offal dock, Boulevard, bet. 161st and 162d streets, N. Y.	1	.....	
7	Offal dock, on the dock	...	.....	
8	.....do	...	.....	
9	Offal dock, 113th street and Ninth avenue, N. Y	1	1	
10	Offal dock, 166th street and Washington avenue, N. Y.	1	.....	
11	Offal dock, 166th street and Boulevard, N. Y.	1	.....	
13	Slaughter-houses, 44th street and East River, N. Y.	8	.....	
13	Slaughter-houses, 45th street and East River, N. Y.	2	.....	
13	Slaughter-houses, 45th street and First avenue, N. Y.	3	1	
13	Slaughter-houses, 47th street and First avenue, N. Y.	31	4	
13	Slaughter-houses, First avenue bet. 45th and 46th sts., N. Y.	12	.....	
14	Slaughter-houses, 44th street and East River, N. Y.	3	.....	
14	Slaughter-houses, 47th street and First avenue, N. Y.	12	.....	
14	Slaughter-houses, First avenue, bet. 45th and 46thsts., N. Y.	6	.....	
15	Slaughter-houses, 45th street and First avenue, N. Y.	5	1	
15	Slaughter-houses, 47th street and First avenue, N. Y	2	.....	
15	Slaughter-houses, First avenue, bet. 45th and 46th sts, N. Y.	13	1	
16	Slaughter-houses, 45th street and First avenue, N. Y	5	1	
16	Slaughter-houses, 47th street and First avenue, N. Y	24	2	
17	Slaughter-houses, 45th street and First avenue, N. Y	4	1	
17	Slaughter-houses, 47th street and First avenue, N. Y	9	.....	
17	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	2	.....	
18	Slaughter-houses; no cows killed	...	.....	
13	Offal dock, Brook avenue and 146th street, N. Y	1	.....	
14	Offal dock, Beach street and Riverdale, N. Y.	1	.....	
15	Offal dock, 77th street and Lexington avenue, N. Y.	1	.....	
16	Offal dock, 110th street and Riverside Drive, N. Y.	1	.....	
17	Offal dock, 50th street and Broadway, N. Y.	1	.....	
18	Offal dock, the dock, N. Y	...	.....	
20	Slaughter-houses, 45th street and First avenue, N. Y	1	1	
20	Slaughter-houses, 47th street and First avenue, N. Y	13	2	
20	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	12	.....	
21	.....do	3	1	
22	Slaughter-houses, 45th street and First avenue, N. Y	2	.....	
23	.....do	2	.....	
23	Slaughter-houses, 47th street and First avenue, N. Y.	9	.....	
24	.....do	1	.....	
25	Slaughter-houses; no cows killed	....	.....	

Inspections at slaughter-houses, offal docks, and stock-yards—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by T. J. Herr, V. S.—Continued.			
1885.				
Apr. 20	Offal dock, Eleventh avenue, bet. 65th and 66th streets, N. Y.	1	1	
21	Offal dock, Riverdale, Appleton's Place, N. Y	1	1	
22	Offal dock, 4th street and Fourth avenue (Woodlawn), N. Y.	1	.....	
23	Offal dock, 146th street and Eighth avenue, N. Y	1	.....	
24	Offal dock, W. 131st street, N. Y	1	1	
25	Offal dock, No. 40 W. 50th street, N. Y	1	1	
26	Offal dock, 165th street and Prospect avenue, N. Y	1	.....	
	Inspections by C. B. Michener, V. S.			
Apr. 6	Slaughter-houses, 60th street and North River, N. Y	..	1	Good.
8	.....do	....	.....	Do.
10	.....do	....	2	Stables, fair; animals, poor.
	Inspections by T. J. Herr, V. S.			
Apr. 27	Slaughter-houses, 47th street and First avenue, N. Y	15	1	
27	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	2	.....	
28	Slaughter-houses, 46th street and First avenue, N. Y	1	.....	
29	Slaughter-houses, 47th street and First avenue, N. Y	6	1	
30	Slaughter-houses, 45th street and First avenue, N. Y	1	1	
May 1	Slaughter-houses, 57th street and First avenue, N. Y	1	.....	
2	Slaughter-houses; no cows killed	....	.....	
Apr. 27	Offal dock, at the dock	1	.....	
28	Offal dock, 140th street and Eighth avenue, N. Y	1	.....	
29	Offal dock, 131st street, be. tSixth and Seventh avenues, N. Y	1	1	
30	Offal dock, Brown's Place, N. Y	1	.....	
May 1	Offal dock, Southern boulevard, N. Y	1	1	
2	Offal dock, at the dock, N. Y	....	.....	
4	Slaughter houses, 45th street and East River, N. Y	2	1	
4	..... do	19	1	
4	Slaughter-houses, First avenue bet. 45th and 46th sts, N. Y.	15	.....	
4	Slaughter-houses, 47th street and First avenue, N. Y	16	2	
5	Slaughter-houses, 45th street and First avenue, N. Y	1	1	
5	Slaughter-houses, 47th street and First avenue, N. Y	6	.....	
6	Slaughter-houses, 45th street and First avenue, N. Y	1	.....	
6	Slaughter-houses, 47th street and First avenue, N. Y	7	1	
7	Slaughter-houses, 45th street and First avenue, N. Y	1	.....	
7	Slaughter-houses, 47th street and First avenue, N. Y	18	2	
8	Slaughter-houses, 45th street and First avenue, N. Y	1	.....	
8	Slaughter-houses, 47th street and First avenue, N. Y	2	.....	
9	Slaughter-houses, no cows killed, N. Y	....	.....	
11	Slaughter-houses, 45th street and East River, N. Y	2	1	
11	.....do	5	.....	
11	Slaughter-houses, 47th street and East River, N. Y	18	3	
12	Slaughter-houses, 45th street and East River, N. Y	1	.....	
12	Slaughter-houses, 47th street and East River, N. Y	5	1	
16	Slaughter-houses; no cows killed	....	.....	
4	Offal dock, 94th street, bet. Ninth and Tenth avenues, N. Y.	1	1	
5	Offal dock, St. Nicholas avenue and 158th street, N. Y	1	.....	
6	Offal dock, Clinton avenue, bet. 169th and 170th streets, N. Y.	1	.....	
7	Offal dock, the dock, N. Y	....	.....	
8	.....do	....	.....	
9	.....do	....	.....	
11	.....do	....	.....	
12	Offal dock, the dock, N. Y	....	.....	
16	Offal dock, 161st street and Brook avenue, N. Y	....	.....	
18	Offal dock, Sixty-third street and Avenue A, N. Y	....	.....	
18	Slaughter-houses, 44th street and East River, N. Y	2	.....	
18	Slaughter-houses, 45th street and First avenue, N. Y	3	.....	
18	Slaughter-houses, 46th street and East River, N. Y	7	.....	
18	Slaughter-houses, 47th street and First avenue, N. Y	27	3	
19	Slaughter-houses, N. Y	....	.....	
20	Slaughter-houses, 44th street and East River, N. Y	1	.....	
20	Slaughter-houses, 45th street and First avenue, N. Y	1	.....	
20	Slaughter-houses, 47th street and First avenue, N. Y	5	3	
21	..... do	30	4	
22	.....do	1	.....	
23	.....do	....	.....	
18	Offal dock, Sedgwick avenue, N. Y	1	.....	
19	Offal dock, Third avenue, bet. 175th and 176th streets, N. Y.	1	.....	
20	..... do	....	.....	
21	Offal dock, Seventy-third st. bet. ave. A and First ave. N. Y	1	.....	
22	Offal dock	....	.....	
23	.....do	....	.....	

Inspections at slaughter-houses, offal docks, and stock-yards—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition
	Inspection by T. J. Herr, V. S.—Continued.			
1885.				
May 25	Slaughter-houses, 44th street and East River, N. Y	4	.....	
25	Slaughter-houses, 45th street and First avenue, N. Y	4	.....	
25	Slaughter-houses, 47th street and First avenue, N. Y	26	1	
26	Slaughter-houses, 44th street and East River, N. Y	17	.....	
26	Slaughter-houses, 47th street and First avenue, N. Y	4	1	
27	....do	9	1	
28	....do	7	1	
28	Slaughter-houses, 44th street and First avenue, N. Y	13	.....	
29	Slaughter-houses, 47th street and First avenue, N. Y	3	.....	
29	Slaughter-houses, 45th street and First avenue, N. Y	1	.....	
30	No cows killed	...	.....	
25	Offal dock, N. Y	...	.....	
26	Offal dock, 166th street and Washington avenue, N. Y	1	.....	
27	Offal dock, 705 First avenue, N. Y	1	1	
28	Offal dock, N. Y	...	.....	
29	Offal dock, 18th street and Tiebold avenue, N. Y	1	.....	
30	Offal dock, west 62d street and Eleventh avenue, N. Y	1	1	
June 1	Slaughter-houses, 44th street and East River, N. Y	4	.....	
1	Slaughter houses, 45th street and First avenue, N. Y	4	1	
1	Slaughter-houses, 47th street and First avenue, N. Y	31	3	
2	Slaughter-houses, 44th street and First avenue, N. Y	7	.....	
2	Slaughter-houses, 47th street and First avenue, N. Y	1	.....	
3	....do	2	1	
3	Slaughter-houses, 44th street and First avenue, N. Y	1	.....	
4	Slaughter-houses, 47th street and First avenue, N. Y	19	1	
5	Slaughter-houses; no cows killed	...	.....	
6	....do	...	.....	
1	Offal dock, N. Y	...	.....	
2	....do	1	.....	
3	Offal dock, Osborne avenue, near Jerome, N. Y	1	.....	
4	Offal dock, 411 West 14th street, N. Y	...	.....	
5	Offal dock, N. Y	...	.....	
6	....do	...	.....	
8	Slaughter-houses, 45th street and First avenue, N. Y	7	1	
8	Slaughter-houses, 47th street and First avenue, N. Y	1	1	
9	....do	1	.....	
9	Slaughter-houses, 45th street and First avenue, N. Y	1	.....	
10	Slaughter-houses, N. Y	...	.....	
11	Slaughter-houses, 47th street and First avenue, N. Y	5	1	
11	Slaughter-houses, 45th street and First avenue, N. Y	1	.....	
11	Slaughter-houses, 44th street and First avenue, N. Y	8	.....	
12	....do	2	.....	
13	Slaughter-houses, N. Y	...	.....	
8	Offal dock, 60th street stock-yard, N. Y	1	.....	
9	Offal dock, 93d street and First avenue, N. Y	1	.....	
10	Offal dock, Riverside drive and 82d street, N. Y	1	1	
11	Offal dock, Mosholu avenue, N. Y	1	.....	
12	Offal dock, Croton and Jerome avenues, N. Y	1	.....	
13	Offal dock, Jacobs street and Kingsbridge road, N. Y	1	1	
15	Slaughter-houses, 44th street and East River, N. Y	2	1	
15	Slaughter-houses, 45th street and First avenue, N. Y	14	2	
15	Slaughter-houses, 47th street and First avenue, N. Y	23	.....	
16	Slaughter-houses, 44th street and East River, N. Y	1	.....	
16	Slaughter-houses, 45th street and First avenue, N. Y	14	.....	
16	Slaughter-houses, 47th street and First avenue, N. Y	12	.....	
16	Slaughter-houses, 46th street and East River, N. Y	1	.....	
17	Slaughter houses, 44th street and East River, N. Y	14	2	
17	....do	10	2	
17	Slaughter-houses, 45th street and East River, N. Y	5	.....	
17	Slaughter-houses, 47th street and East River, N. Y	2	.....	
18	Slaughter-houses, 44th street and East River, N. Y	17	1	
18	....do	9	1	
18	Slaughter-houses, 45th street and First avenue, N. Y	1	1	
18	Slaughter-houses, 47th street and First avenue, N. Y	23	1	
18	....do	3	.....	
19	Slaughter-houses, 44th street and East River, N. Y	17	.....	
19	Slaughter-houses, 45th street and First avenue, N. Y	3	.....	
19	Slaughter-houses, 47th street and First avenue, N. Y	3	.....	
20	Slaughter-houses, N. Y	...	.....	
15	Offal dock, 90th street, near Second avenue, N. Y	1	.....	
16	Offal dock, N, Y	...	.....	
17	Offal dock, 102d street, near Madison street, N. Y	1	1	
18	Offal dock, 174th street, near Washington avenue, N. Y	1	.....	
19	Offal dock, Macomb road and Aqueduct avenue, N. Y	1	.....	
20	Offal dock, N. Y	...	.....	
22	Slaughter-houses, 44th street and East River, N. Y	9	.....	

Inspections at slaughter-houses, offal-docks, and stock-yards—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition
	Inspections by T. J. Herr, V. S.—Continued.			
1885.				
June 22	Slaughter-houses, 45th street and First avenue, N. Y.	2	.....	
22	Slaughter-houses, First avenue, bet. 45 and 46th streets, N.Y	4	.....	
22	Slaughter-houses, 47th street and First avenue, N. Y	14	.....	
23	.....do	4	.....	
24	Slaughter-houses, 44th street and East River, N. Y.	11	.....	
24	Slaughter-houses, 47th street and First avenue, N. Y.	7	1	
25	Slaughter-houses, 44th street and East River, N. Y.	6	.....	
25	Slaughter-houses, 45th street and First avenue, N. Y.	2	.....	
25	Slaughter-houses 47th street and First avenue, N. Y	30	2	
26	.....do	1	.....	
27	Slaughter-houses, N. Y	.....	.....	
22	Offal dock, 108th street and First avenue, N. Y	1	1	
23	Offal dock, 90th street and First avenue, N. Y.	1	.....	
24	Offal dock, N. Y	.....	.....	
25	Offal dock, Westchester and Concord avenues, N. Y.	1	.....	
26	Offal dock, Grand avenue, Woodlawn, N. Y.	1	.....	
27	Offal dock, Aqueduct and Centre avenues, N. Y	1	.....	
	Inspections by C. B. Michener, V. S.			
June 22	Slaughter-houses, 60th street and North River, N. Y.	.....	.....	Good.
24	.....do	.....	.....	Do.
26	.....do	.....	.....	Do.
29	.....do	.....	.....	Do.
	Inspections by T. J. Herr, V. S.			
June 29	Slaughter-houses, 47th street and First avenue, N. Y.	12		
30	.....do	2	1	
30	Slaughter-houses, 45th street and First avenue, N. Y	1	.....	
30	Slaughter-houses, 44th street and East River, N. Y	3	.....	
July 1	.....do	9	1	
1	Slaughter-houses, 47th street and East River, N. Y	11	2	
2	.....do	7	5	
2	Slaughter-houses, 44th street and East River, N. Y.	6	.....	
3	.....do	2	.....	
3	Slaughter-houses, 47th street and First avenue, N. Y.	4	.....	
4	Slaughter-houses, N. Y	.....	.....	
6	Slaughter-houses, 47th street and First avenue, N. Y.	21	.....	
7	.....do	22	.....	
7	Slaughter-houses, 44th street and First avenue, N. Y.	19	.....	
8	.....do	8	.....	
8	Slaughter-houses, 45th street and First avenue, N. Y.	2	1	
8	Slaughter-houses, 47th street and First avenue, N. Y.	3	.....	
9	.....do	2	.....	
9	Slaughter-houses, 44th street and East River, N. Y	2	.....	
10	.....do	2	.....	
11	Slaughter-houses, N. Y	.....	.....	
June 29	Offal dock, Jefferson street and Columbia avenue, N. Y	1	.....	
30	Offal dock, 182d street and Jerome avenue, N. Y	1	.....	
July 1	Offal dock	.....	.....	
2	.....do	.....	.....	
3	Offal dock, 60th street stock yard, N. Y	1	.....	
4	Offal dock, Boston avenue and Southern boulevard, N. Y	1	.....	
6	Offal dock, Avenue A and 63d street, N. Y	1	1	
7	Offal dock, 94th street and Madison avenue, N. Y.	1	.....	
7	Offal dock, Riverdale, N. Y.	1	.....	
8	Offal dock 139th street and Tenth avenue, N. Y.	1	1	
9	Offal dock, 225 E. 54th street, N. Y	1	.....	
10	Offal dock, 97th street and Boulevard, N. Y	1	.....	
11	Offal dock, South street, Riverdale, N. Y	.....	2	Good.
	Inspections by C. B. Michener, V. S.			
July 1	Slaughter-houses, 60th street and North River, N. Y.	.....	2	Good.
3	.....do	.....	.....	Very good.
6	.....do	.....	.....	Do.
8	.....do	2	.....	
	Inspections by T. J. Herr, V. S.			
July 13	.....do	1	1	
13	Slaughter-houses, 44th street and East River, N. Y	10	.....	
13	Slaughter-houses, 45th street and First avenue, N. Y.	7	2	
14	Slaughter-houses, 47th street and First avenue, N. Y.	1	.....	
15	.....do	3	.....	

Inspections at slaughter-houses, offal docks, and stock-yards—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by T. J. Herr, V. S.—Continued.			
1885.				
July 15	Slaughter-houses, 45th street and First avenue, N. Y.	1	.....	
16	Slaughter-houses, 47th street and First avenue, N. Y.	3	.....	
16	....do	....	.....	
17	Slaughter-houses, 45th street and First avenue, N. Y.	....	.....	
18	Slaughter-houses	....	.....	
13	....do	....	.....	
14	Offal dock	....	.....	
	....do	....	.....	
15	Offal dock, 141st street between Sixth and Sevth avenues.	1	.....	
16	Offal dock, Riverdale, N. Y.	1	.....	
17	Offal dock, Inwood, N. Y	1	.....	
18	Offal dock, 121 East 87th street, N. Y	1	.....	
20	Slaughter-houses, 45th street and First avenue, N. Y.	3	.....	
20	Slaughter-houses, 47th street and First avenue, N. Y.	2	.....	
21	Slaughter-houses, 45th street and First avenue, N. Y.	1	.....	
22	....do	4	.....	
22	Slaughter-houses, 47th street and First avenue, N. Y.	20	.....	
23	....do	1	.....	
23	Slaughter-houses, 45th street and First avenue, N. Y.	1	.....	
24	Slaughter-houses, 47th street and First avenue, N. Y.	7	.....	
24	Slaughter-houses, 45th street and First avenue, N. Y.	1	.....	
25	Slaughter-houses, N. Y	....	.....	
20	Offal dock, 131st street and Broadway, N. Y.	1	.....	
21	Offal dock, 92d street and Fifth avenue, N. Y.	1	.....	
22	Offal dock, 402 East 42d street, N. Y.	1	.....	
23	Offal dock, N. Y	....	.....	
24	....do	....	.....	
25	....do	....	.....	
27	Slaughter-houses, 44th street and East River, N. Y.	11	.....	
27	Slaughter-houses, 45th street and First avenue, N. Y.	1	.....	
27	Slaughter-houses, 47th street and First avenue, N. Y	8	2	
28	....do	4	.....	
28	Slaughter-houses, 44th street and First avenue, N. Y.	11	.....	
29	Slaughter-houses, 47th street and First avenue, N. Y.	10	2	
30	....do	5	1	
30	Slaughter-houses, 45th street and First avenue, N. Y.	2	.....	
31	Slaughter-houses, 47th street and First avenue, N. Y.	2	1	
Aug. 1	Slaughter-houses, N. Y	....	.....	
July 27	Offal dock, Jerome avenue, N. Y	1	.....	
28	Offal dock, 138th street and Southern boulevard, N. Y	1	.....	
29	Offal dock, 92d street and Second avenue, N. Y.	1	.....	
30	Offal dock, 150th street and Mount Morrison, avenue, N. Y.	1	.....	
31	Offal dock, N. Y	....	.....	
Aug. 1	Offal dock, Inwood Hill	1	1	
3	Slaughter-houses, 47th street and First avenue, N. Y.	3	1	
4	....do	2	.....	
4	Slaughter-houses, 45th street and First avenue, N. Y.	16	3	
5	....do	4	.....	
5	Slaughter-houses, 47th street and First avenue, N. Y.	16	.....	
5	....do	1	1	
6	....do	38	4	
6	Slaughter-houses, 45th street and First avenue, N. Y.	2	.....	
6	....do	1	.....	
7	Slaughter-houses, 47th street and First avenue, N. Y.	20	1	
7	Slaughter-houses, 45th street and First avenue, N. Y.	1	1	
8	Slaughter-houses	....	.....	
3	Offal dock, 106th street, bet. Ninth and Tenth avenues, N. Y.	1	.....	
4	Offal dock	....	.....	
5	....do	....	.....	
6	....do	....	.....	
7	Offal dock, 2752 Decatur avenue, N. Y.	1	.....	
8	Offal dock	....	.....	
	Inspections by C. B. Michener, V. S.			
July 15	Stock-yards, 60th street and North River, N. Y.	....	1	Very good.
22	....do	....	.....	Do.
	Inspections by T. J. Herr, V. S.			
Aug. 10	Slaughter-houses, 45th street and First avenue, N. Y.	1	.....	
10	Slaughter-houses, 46th street and East River, N. Y.	1	.....	
10	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	12	1	
10	Slaughter-houses, 47th street and First avenue, N. Y.	28	6	
11	Slaughter-houses, 45th street and First avenue, N. Y.	1	.....	
11	Slaughter-houses, 47th street and First avenue, N. Y.	5	1	

Inspections at slaughter-houses, offal docks, and stock-yards—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by T. J. Herr, V. S.—Continued.			
1885.				
Aug. 12	Slaughter-houses, 47th street and First avenue, N. Y	6	3	
12	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	2	2	
13	Slaughter-houses, 45th street and First avenue, N. Y.	1	.....	
13	Slaughter-houses, First ave., bet. 45th and 46th sts., N. Y.	5	.....	
13	Slaughter-houses, 47th street and First avenue, N. Y.	10	3	
14	.....do	1	.....	
14	Slaughter-houses, First ave., bet. 45th and 46th sts., N. Y.	9	.....	
15	Slaughter-houses	.....	.....	
10	Offal dock, First avenue, bet. 118th and 119th streets, N. Y.	1	1	
11	Offal dock, Moholu avenue, N. Y.	1	.....	
12	Offal dock, 158th street and North River, N. Y.	1	.....	
13	Offal dock, 75th street and Riverside Drive, N. Y.	1	.....	
14	Offal dock	.....	.....	
15	.....do	.....	.....	
17	Slaughter-houses, 45th street and First avenue, N. Y.	8	.....	
17	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	8	.....	
17	Slaughter-houses, 47th street near First avenue, N. Y.	5	.....	
18	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	2	1	
19	.....do	1	.....	
20	Slaughter-houses, 47th street, near First avenue, N. Y.	3	.....	
21	.....do	1	.....	
22	Slaughter-houses, N. Y	.....	.....	
17	Offal dock, 73d street, between Avenues A and First, N. Y.	1	.....	
18	Offal dock, 309 W. 141st street, N. Y.	1	.....	
19	Offal dock	.....	.....	
20	.....do	1	.....	
21	Offal dock, 129th street, near Boulevard, N. Y.	.....	1	
22	Offal dock	.....	.....	
24	Slaughter-houses, White Plains	.....	.....	
25	Slaughter-houses, First ave., bet. 45th and 46th streets, N. Y.	7	1	
25	Slaughter-houses, 47th street and First avenue, N. Y.	5	1	
26	.....do	4	.....	
26	Slaughter-houses, First ave., bet. 45th and 46th streets, N. Y.	2	.....	
26	Slaughter-houses, 45th street and First avenue, N. Y	1	.....	
27	.....do	12	1	
27	Slaughter-houses, First ave., bet. 45th and 46th streets, N. Y.	13	1	
27	Slaughter-houses, 47th street and First avenue, N. Y.	10	.....	
28	.....do	1	.....	
28	Slaughter-houses, 45th street and First avenue, N. Y.	1	.....	
29	Slaughter-houses	.....	.....	
24	Offal dock	.....	.....	
25	Offal dock, Pier 7, North River	1	.....	
26	Offal dock	.....	.....	
27	.....do	.....	.....	
28	Offal dock, 173d street and Washington avenue, N. Y	1	.....	
29	Offal dock	.....	.....	
31	Slaughter-houses, 45th street and First avenue, N. Y	1	.....	
31	Slaughter-houses, 47th street and First avenue, N. Y	5	4	
31	Slaughter-houses, First ave., bet. 45th and 46th streets, N. Y.	4	.....	
Sept. 1	.....do	2	.....	
1	Slaughter-houses, 47th street and First avenue, N. Y.	2	.....	
2	.....do	3	1	
2	Slaughter-houses, First ave., bet. 45th and 46th streets, N. Y.	8	.....	
3	.....do	19	.....	
4	Slaughter-houses	.....	.....	
5	.....do	.....	.....	
Aug. 31	Offal dock	.....	.....	
Sept. 1	Offal dock, Ogden avenue, near Devoe street, N. Y	1	.....	
2	Offal dock, Westchester avenue, near Robbins ave., N. Y	1	1	
2	Offal dock, Ninth avenue, near 93d street, N. Y.	1	.....	
3	Offal dock, 152d street, near Tenton avenue, N. Y	1	1	
Aug. 4	Offal dock, Albany Place, N. Y.	1	.....	
5	Offal dock, Lafayette avenue, N. Y	1	.....	
Sept. 7	Slaughter-houses, 45th street and East River, N. Y	1	1	
7	Slaughter-houses, 47th street and First avenue, N. Y.	2	1	
8	.....do	3	.....	
8	Slaughter-houses, 45th street and East River, N. Y	1	1	
8	Slaughter-houses, First ave., bet. 45th and 46th streets, N. Y.	16	.....	
9	Slaughter-houses, 47th street and First avenue, N. Y.	1	.....	
9	Slaughter-houses, First ave., bet. 45th and 46th streets, N. Y.	21	.....	
10	Slaughter houses	.....	.....	
11	.....do	.....	.....	
12	.....do	.....	.....	
7	Offal dock	.....	.....	
8	.....do	.....	.....	
9	.....do	.....	.....	

Inspections at slaughter-houses, offal docks, and stock-yards—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by T. J. Herr, V. S.—Continued.			
1885.				
Sept. 10	Offal dock	...	...	
11	...do	...	...	
12	Offal dock, 60th street	1	...	
14	Slaughter-houses, 45th street and First avenue, N. Y.	1	...	
14	Slaughter-houses, 47th street and First avenue, N. Y.	1	...	
14	Slaughter-houses, First ave., bet. 45th and 46th streets, N. Y.	3	2	
14	Slaughter-houses, 161st street and Brook avenue, N. Y.	1	...	
15	Slaughter-houses, 45th street and First avenue, N. Y.	2	...	
15	Slaughter-houses, 47th street and First avenue, N. Y.	1	...	
15	Slaughter-houses, First ave., bet. 45th and 46th streets, N. Y.	1	...	
16	Slaughter-houses, 47th street and First avenue, N. Y.	1	...	
17	Slaughter-houses, 45th street and East River, N. Y.	1	1	
17	Slaughter-houses, 47th street and First avenue, N. Y.	1	...	
17	Slaughter-houses, First ave., bet. 45th and 46th streets, N. Y.	8	1	
18	Slaughter-houses, First ave., bet. 45th and 46th streets, N. Y.	1	...	
18	Slaughter-houses, 47th street and First avenue, N. Y.	2	...	
19	Slaughter-houses, N. Y.	...	...	
14	Offal dock, 113th street and Seventh avenue, N. Y.	1	...	
15	Offal dock, foot Jay street, N. Y.	1	...	
16	Offal dock, 87th street and Eleventh avenue, N. Y.	1	...	
17	Offal dock, N. Y.	...	...	
18	...do	...	...	
19	Offal dock, 60th street stock-yard, N. Y.	1	...	
21	Slaughter houses, 45th street and First avenue, N. Y.	2	...	
21	Slaughter-houses, 47th street and First avenue, N. Y.	5	2	
21	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	9	...	
22	Slaughter-houses, 47th street and First avenue, N. Y.	1	1	
23	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	1	...	
24	Slaughter-houses, N. Y.	...	...	
25	Slaughter-houses, 47th street and First avenue, N. Y.	1	...	
26	Slaughter-houses, N. Y.	...	...	
21	Offal dock, N. Y.	...	...	
22	Offal dock, Dutch lane, near Broadway, N. Y.	1	...	
23	Offal dock, N. Y.	...	...	
24	Offal dock, 105th st., bet. First avenue and East River, N. Y.	1	1	
25	Offal dock, N. Y.	...	...	
26	...do	...	...	
	Inspection by L. McLean, V. S.			
Sept. 26	Offal dock, foot of Maspeth avenue, N. Y.	...	3	
	Inspections by Thomas J. Herr, V. S.			
Sept. 28	Slaughter-houses, 45th street and East River, N. Y.	1	...	
28	Slaughter-houses, 45th street and First avenue, N. Y.	2	2	
28	Slaughter-houses, 47th street and First avenue, N. Y.	6	1	
28	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	3	...	
29	Slaughter-houses, 45th street and East River, N. Y.	2	2	
29	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	2	2	
30	Slaughter-houses, 45th street and First avenue, N. Y.	8	...	
30	Slaughter-houses, 47th street and First avenue, N. Y.	1	...	
Oct. 1	Slaughter-houses, 45th street and East River, N. Y.	2	2	
1	Slaughter-houses, 45th street and First avenue, N. Y.	1	...	
1	Slaughter-houses, 47th street and First avenue, N. Y.	1	...	
2	...do	7	3	
3	Slaughter-houses, N. Y.	...	...	
Sept. 28	Offal dock, N. Y.	...	...	
29	...do	...	...	
30	...do	...	...	
Oct. 1	Offal dock, 60th street stock-yard, N. Y.	1	...	
2	Offal dock, N. Y.	...	...	
3	...do	...	...	
5	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	9	...	
5	Slaughter-houses, 47th street and First avenue, N. Y.	1	...	
6	Slaughter-houses, 45th street and East River, N. Y.	1	1	
6	Slaughter-houses, 47th street and First avenue, N. Y.	2	...	
6	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	7	...	
7	...do	11	...	
7	Slaughter-houses, 47th street and First avenue, N. Y.	5	1	
8	...do	1	...	
8	Slaughter-houses, 45th street and First avenue, N. Y.	1	...	
8	Slaughter-houses, First avenue, bet. 44th and 45th sts., N. Y.	1	...	
8	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	9	...	
9	...do	9	...	
9	Slaughter-houses, 47th street and First avenue, N. Y.	5	...	

Inspections at slaughter-houses, offal docks, and stock-yards—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Thomas J. Herr, V. S.—Continued.			
1885.				
Oct. 5	Offal dock, 136th street, bet. Sixth and Seventh avenues, N. Y.	1	.....	
6	Offal dock, N. Y	.....	.....	
7	Offal dock, Highbridge, N. Y	1	.....	
8	Offal dock, N. Y	.....	.....	
9	Offal dock, 68th street, bet. Tenth and Eleventh aves., N. Y	1	.....	
10	Offal dock, N. Y	.....	.....	
12	Slaughter-houses, N. Y	.....	.....	
13	Slaughter-houses, 47th street and First avenue, N. Y	1	.....	
14	.....do	8	.....	
14	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y	8	.....	
15	Slaughter-houses, 45th street and East River, N. Y	1	.....	
15	Slaughter-houses, 45th street and First avenue, N. Y	2	.....	
15	Slaughter-houses, 47th street and First avenue, N. Y	1	.....	
16	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y	5	.....	
17	Slaughter-houses, N Y	.....	.....	
12	Offal dock, N. Y	.....	.....	
13	.....do	.....	.....	
14	.....do	.....	.....	
15	Offal dock, Willis avenue, near Southern boulevard, N. Y	1	.....	
16	Offal dock, N. Y	.....	.....	
17	.....do	.....	.....	
19	Slaughter-houses, 47th street and First avenue, N. Y	1	.....	
20	.....do	1	.....	
21	.....do	2	.....	
22	.....do	4	.....	
22	Slaughter-houses, 45th street and First avenue, N. Y	4	.....	
23	Slaughter-houses, N. Y	.....	.....	
24	.....do	.....	.....	
19	Offal dock, Broadway, bet. 91st and 92d streets, N. Y	.....	.....	
20	Offal dock, 432 E. 88th street, N. Y	.....	.....	
21	Offal dock, Ninth avenue, bet. 65th and 66th sts., N. Y	.....	.....	
22	Offal dock, N. Y	.....	.....	
23	.....do	.....	.....	
24	.....do	.....	.....	
26	Slaughter-houses, 47th street and First avenue, N. Y	1	.....	
27	Slaughter-houses, First avenue, bet. 45th and 46th sts , N. Y	5	.....	
27	.....do	7	.....	
27	Slaughter-houses, 47th street and First avenue, N. Y	1	.....	
28	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y	7	1	
28	Slaughter-houses, 47th street and First avenue, N Y	3	1	
29	Slaughter-houses, 45th street and First avenue, N. Y	1	.....	
29	Slaughter-houses, 45th street and East River, N. Y	1	.....	
29	Slaughter-houses, First avenue, bet. 44th and 45th sts., N. Y	2	2	
29	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y	4	.....	
29	Slaughter-houses, 47th street and First avenue, N. Y	8	1	
30	Slaughter-houses, none	....	5	
31	.....do	.....	.....	
26	Offal dock, 4th street, N. Y	1	.....	
27	Offal dock, N. Y	.....	.....	
28	Offal dock, 50th street stock-yards, N. Y	1	.....	
29	Offal dock, N. Y	.....	.....	
30	.....do	.....	.....	
31	.....do	.....	.....	
Nov. 2	Slaughter-houses, 45th street and First avenue, N. Y	3	3	
2	Slaughter-houses, 45th street and East River, N. Y	6	1	
2	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y	4	1	
2	Slaughter-houses, 47th street, near First avenue, N. Y	8	1	
3	Slaughter-houses, First avenue, bet. 44th and 45th sts., N. Y	15	.....	
3	.....do	1	.....	
3	Slaughter-houses, 47th street, near First avenue, N. Y	1	1	
4	Slaughter-houses, 45th street, near 1st, N. Y	2	1	
4	Slaughter-houses, 47th street, near 1st, N. Y	1	1	
5	.....do	5	.....	
2	Offal dock	.....	.....	
3	.....do	.....	.....	
4	.....do	.....	.....	
5	.....do	.....	.....	
6	.....do	.....	.....	
7	.....do	.....	.....	
9	Slaughter-houses, First ave., bet. 45th and 46th streets, N. Y	18	1	
9	Slaughter-houses, First avenue and 47th street, N. Y	7	3	
10	Slaughter-houses, First avenue and 45th street, N. Y	2	2	
10	Slaughter-houses, 45th street and East River, N. Y	1	1	
10	Slaughter-houses, First ave., bet. 45th and 46th streets, N. Y	4	.....	
11	Slaughter-houses, First avenue and 45th street, N. Y	8	8	

Inspections at slaughter-houses, offal docks, and stock-yards—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspection by Thomas J. Herr, V. S.—Continued.			
1885.				
Nov. 11	Slaughter-houses, 47th street and First avenue, N. Y	1	1	
12	Slaughter-houses, 45th street and First avenue, N. Y	8	4	
12	Slaughter-houses, First ave., bet. 45th and 46th streets, N. Y.	7	1	
12	Slaughter-houses, 47th street and First avenue, N. Y	8	3	
13	Slaughter-houses, 45th street and First avenue, N. Y	1	1	
9	Offal dock, N. Y			
10	....do			
11	....do			
12	Offal dock, 60th street stock-yard, N. Y			
13	....do			
14	....do			
16	Slaughter-houses, 1st street, bet. 45th and 46th sts., N. Y	29		
16	Slaughter-houses, First ave., bet. 44th and 45th streets, N. Y.	1		
16	Slaughter-houses, 47th street and First avenue, N. Y	21	2	
17	Slaughter-houses, First avenue, bet. 45th and 46th sts. N. Y..	6	1	
17	Slaughter-houses, 47th street and First avenue, N. Y	8	1	
18	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	4		
18	Slaughter-houses, 45th street and East River, N. Y	1		
18	Slaughter-houses, 47th street and First avenue, N. Y	3		
19	Slaughter-houses, 45th street and First avenue, N. Y	1		
19	Slaughter-houses, First ave., bet. 45th and 46th sts., N. Y....	8	1	
19	Slaughter-houses, First ave., Cor. 47th street, N. Y	7	3	
20	Slaughter-houses, First ave., bet. 45th and 46th sts., N. Y....	2	1	
21	None			
16	Offal dock, Keeps' place, N. Y	1		
17	Offal dock, Maholu avenue, N. Y	1		
18	Offal dock, 136th st. and Eastern Boulevard, N. Y	1		
18	Offal dock, Railroad avenue, near 171st street, N. Y	1	1	
19	Offal dock, 60th street, stock-yards, N. Y	2		
20	Offal dock, N. Y			
21	Offal dock, 107th street and East River, N. Y	1	1	
23	Slaughter-houses, 45th street and First avenue, N. Y	2	2	
23	Slaughter-houses, First ave., bet. 45th and 46th sts., N. Y....	19	3	
23	Slaughter-houses, 47th street and First avenue, N. Y	26	1	
24	Slaughter-houses, 45th street and East River, N. Y	1	1	
24	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	7	1	
24	Slaughter-houses, 47th street and First avenue, N. Y	11		
25	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	11	1	
25	Slaughter-houses, 47th street and First avenue, N. Y	24		
26	Slaughter-houses, First avenue and 45th street, N. Y	1		
26	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	4		
26	Slaughter-houses, First avenue and 47th street, N. Y	7	1	
27	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y..	4	1	
27	Slaughter-houses, 47th street and First avenue, N. Y			
23	Offal dock, N. Y			
24	....do			
25	....do			
26	....do			
27	Offal dock, Southern Boulevard and Union avenue, N. Y			
28	Offal dock, N. Y	73	1	
30	Slaughter-houses, First ave., bet. 45th and 46th streets, N. Y.	26	3	
30	Slaughter-houses, 47th street and First avenue, N. Y	6		
30	Slaughter-houses, 45th and First avenue, N. Y	15		
Dec. 1	Slaughter-houses, First avenue bet. 45th and 46th sts., N. Y.	12		
1	Slaughter-houses, 45th street and First avenue, N. Y	3		
1	Slaughter-houses, 47th street and First avenue, N. Y	10		
2	....do	3		
2	Slaughter-houses, First avenue bet. 45th and 46th sts., N. Y.	2		
3	Slaughter-houses, 45th street and East River, N. Y	1		
3	Slaughter-houses, 45th street and First avenue, N. Y	5		
3	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	5		
3	Slaughter-houses, 47th street and First avenue, N. Y	2		
3	Slaughter-houses, First avenue, bet. 44th and 45th sts., N. Y.	1	1	
4	Slaughter-houses, 45th street and First avenue, N. Y	14		
4	Slaughter-houses, 47th street and First avenue, N. Y			
5	None	1		
1	Offal dock, Forest avenue and 145th street, N. Y			
2	Offal dock, N. Y			
3	Offal dock, Fifth avenue and 117th street, N. Y	1		
4	Offal dock, 136th street and Southern Boulevard, N. Y	1		
5	Offal dock, 118th street and New avenue, N. Y	27		
7	Slaughter-houses, 45th street and First avenue, N. Y	85		
7	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y..	11		
8	....do	2		
8	Slaughter-houses, 45th street and First avenue, N. Y	14		
9	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	13		

Inspection at slaughter-houses, offal docks, and stock-yards—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Thomas J. Herr, V. S.—Continued.			
1885.				
Dec. 9	Slaughter-houses, 46th street and East River, N. Y	2	.....	
10	..... do	18	.....	
10	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	3	.....	
10	Slaughter-houses, 45th street and First avenue, N. Y	4	.....	
11	..... do	1	.....	
11	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	17	.....	
11	Slaughter-houses, 46th street and East River, N. Y	....	.....	
12	Offal dock, none	....	.....	
7	Offal dock, N. Y	....	.....	
8	..... do	....	.....	
9	..... do	1	.....	
10	Offal dock, 60th street yard, N. Y	....	.....	
11	Offal dock, N. Y	....	.....	
12	..... do	13	3	
14	Slaughter-houses, 45th street and First avenue, N. Y	23	1	
14	Slaughter-houses, 46th street and East River, N. Y	22	.....	
14	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	6	1	
14	Slaughter-houses, 46th street and East River, N. Y	15	.....	
15	Slaughter-houses, 45th street and East River, N. Y	3	.....	
15	Slaughter-houses, 46th street and East River, N. Y	6	.....	
15	Slaughter-houses, First avenue, bet. 45th and 46th sts., N. Y.	16	.....	
16	Slaughter-houses, 46th and East River, N. Y	10	.....	
16	Slaughter-houses, First avenue bet. 45th and 46th sts., N. Y.	....	.....	
17	Slaughter-houses, 45th street and First avenue, N. Y	7	1	
17	Slaughter-houses, 45th street and East River, N. Y	1	.....	
17	Slaughter-houses, 46th street and East River, N. Y	5	2	
17	Slaughter-houses, 47th street and First avenue, N. Y	23	.....	
18	Slaughter-houses, First avenue, bet. 45th and 46th streets, N. Y	2	.....	
19	Slaughter-houses	....	.....	
14	Offal dock, 115th street and Boulevard, N. Y	1	.....	
15	Offal dock	....	.....	
16	..... do	....	.....	
17	Offal dock, Elm Park, 93d street, N. Y	1	.....	
18	Offal dock	....	.....	
19	..... do	....	.....	
28	Slaughter-houses, 45th street and First avenue, N. Y	3	1	
28	Slaughter-houses, 47th street and First avenue, N. Y	7	2	
28	Slaughter-houses, First avenue, bet. 45th and 46th streets, N. Y	28	1	
28	Slaughter-houses, 46th street and East River, N. Y	28	1	
28	Slaughter-houses, 45th street and East River, N. Y	1	.....	
29	Slaughter-houses, 45th street and First avenue, N. Y	2	.....	
29	..... do	1	2	
29	Slaughter-houses, 46th street and First avenue, N. Y	3	.....	
29	Slaughter-houses, First avenue, bet. 45th and 46th streets, N. Y	8	.....	
30	Slaughter-houses, 45th street and First avenue, N. Y	1	3	
30	Slaughter-houses, 45th street and East River, N. Y	1	2	
30	Slaughter-houses, First avenue, bet. 45th and 46th streets, N. Y	8	2	
31	Slaughter-houses, 45th street and First avenue, N. Y	3	.....	
31	Slaughter-houses, First avenue, bet. 45th and 46th streets, N. Y	....	.....	
28	Offal dock, No. 1051 First avenue, N. Y	1	.....	
29	Offal dock	....	.....	
30	Offal dock, 115th st., bet. Fourth and Lexington avenues, N. Y.	1	.....	
31	Offal dock	....	.....	
28	Stock-yard, 59th street, N. Y	56	.....	Fair.
30	..... do	52	.....	Do.

Inspections at piers, steamers, &c., New York.

	Inspection by T. J. Herr, V. S.			
1885.				
Mar. 24	Guthrie Bell & Co., Great Monarch, N. J	60	.....	
Apr. 7	Barge Charles Spear, Pier 35, North River	2	.....	Good.
7	Steamer Hasbrouck, Pier 35, North River	10	.....	Do.
14	Steamer Redfield, Pier 35, North River	9	.....	Do.
14	Steamer Ansonia, Pier 35, North River	13	.....	Do.
14	Steamer Catskill, Pier 35, North River	73	.....	Fair.
14	Barge Charles Spear, Pier 35, North River	1	.....	Good.
14	Steamer City of Kingston, Pier 34, North River	12	.....	Do.
14	Steamer Hasbrouck, Pier 35, North River	5	.....	Fair.
21	Steamer Catskill, Pier 34, North River	63	.....	Do.
21	Steamer Ansonia, Pier 35, North River	30	.....	Do.
21	Steamer City of Kingston, Pier 34, North River	18	.....	Good.

Inspections at piers, steamers, &c., New York—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by T. J. Herr, V. S.—Continued.			
1885.				
Apr. 21	Steamer Hasbrouck, Pier 35, North River	1	.....	Good.
21	Barge Charles Spear, Pier 35, North River	7	.....	Do.
21	Steamer Redfield, Pier 35, North River	1	.....	Do.
28	Steamer Catskill, Pier 34, North River	58	.....	Fair.
28	Steamer City of Kingston, Pier 34, North River	7	.....	Good.
28	Steamer Hasbrouck, Pier 35, North River	2	.....	Do.
28	Barge Charles Spear, Pier 35, North River	2	.....	Do.
28	Steamer Ansonia, Pier 35, North River	15	.....	Fair.
28	Steamer Redfield, Pier 35, North River	13	.....	Good.
May 5	Steamer Catskill, Pier 34, North River	44	.....	Do.
5	Steamer City of Kingston, Pier 34, North River	30	.....	Poor.
5	Steamer Hasbrouck, Pier 35, North River	...	.....	Fair.
5	Steamer Ansonia, Pier 35, North River	18	.....	Good.
5	Steamer Redfield, Pier 35, North River	8	.....	Do.
5	Barge Charles Spear, Pier 35, North River	2	.....	Poor.
12	.....do.....	1	.....	Good.
12	Steamer Catskill, Pier 34, North River	48	.....	Do.
12	Steamer Hasbrouck, Pier 35, North River	1	.....	Do.
12	Steamer Ansonia, Pier 35, North River	15	.....	Fair.
12	Steamer City of Kingston, Pier 34, North River	9	.....	Good.
12	Steamer Redfield, Pier 35, North River	...	.....	
19	Steamer City of Kingston, Pier 34, North River	21	.....	Do.
19	Steamer Ansonia, Pier 35, North River	18	.....	Do.
19	Steamer Hasbrouck, Pier 35, North River	1	.....	Poor.
19	Steamer Redfield, Pier 35, North River	8	.....	Good.
19	Steamer Catskill, Pier 34, North River	21	.....	Do.
19	Barge Charles Spear, Pier 35, North River	3	.....	Do.
26	Steamer City of Kingston, Pier 34, North River	11	.....	Do.
26	Steamer Catskill, Pier 34, North River	43	.....	Do.
26	Steamer Ansonia, Pier 35, North River	24	.....	Do.
26	Steamer Redfield, Pier 35, North River	20	.....	Do.
26	Steamer Hasbrouck, Pier 35, North River	2	.....	
26	Barge Charles Spear, Pier 35, North River	...	.....	Do.
June 2	Steamer Hasbrouck, Pier 35, North River	1	.....	Do.
2	Steamer Ansonia, Pier 35, North River	30	.....	Do.
2	Steamer Redfield, Pier 35, North River	12	.....	Do.
2	Steamer City of Kingston, Pier 34, North River	10	.....	Do.
2	Steamer Catskill, Pier 34, North River	70	.....	Do.
2	Steamer Leader, Pier 34, North River	5	.....	Do.
2	Barge Charles Spear, Pier 35, North River	8	.....	Do.
9	Steamer Catskill, Pier 34, North River	36	.....	Do.
9	Steamer City of Kingston, Pier 34, North River	10	.....	Do.
9	Steamer Leader, Pier 34 North River	...	.....	
9	Steamer Redfield, Pier 35, North River	8	.....	Do.
9	Steamer Ansonia, Pier 35, North River	30	.....	Do.
9	Steamer Hasbrouck, Pier 35, North River	2	.....	Do.
9	Barge Charles Spear, Pier 35, North River	4	.....	
16	Steamer City of Kingston, Pier 34, North River	19	.....	Do.
16	Steamer Ansonia, Pier 35, North River	12	.....	Do.
16	Steamer Redfield, Pier 35, North River	7	.....	Do.
16	Steamer Kaaterskill, Pier 34, North River	36	.....	Do.
16	Steamer Hasbrouck, Pier 35, North River	35	.....	Do.
16	Barge Charles Spear, Pier 35, North River	1	.....	Do.
23	Steamer Hasbrouck, Pier 35, North River	15	.....	Do.
23	Steamer Ansonia, Pier 35, North River	21	.....	Do.
23	Steamer Kaaterskill, Pier 34, North River	16	.....	Do.
23	Barge Charles Spear, Pier 35, North River	9	.....	Do.
23	Steamer City of Kingston, Pier 34, North River	13	.....	Do.
23	Steamer Redfield, Pier 35, North River	11	.....	Do.
30	Steamer City of Kingston, Pier 34, North River	7	.....	Do.
30	Steamer Redfield, Pier 35, North River	12	.....	Do.
30	Barge Charles Spear, Pier 35, North River	14	.....	Do.
30	Steamer Ansonia, Pier 35, North River	20	.....	Do.
30	Steamer Hasbrouck, Pier 35, North River	4	.....	Do.
30	Steamer Kaaterskill, Pier 34, North River	34	.....	Do.
July 7	Barge Charles Spear, Pier 35, North River	22	.....	Do.
7	Steamer Kaaterskill, Pier 34, North River	30	.....	Do.
7	Steamer City of Kingston, Pier 34, North River	5	.....	Do.
7	Steamer Redfield, Pier 35, North River	10	.....	Do.
7	Steamer Ansonia, Pier 35, North River	15	.....	Do.
7	Steamer Hasbrouck, Pier 35, North River	5	.....	Do.
14	Steamer Kaaterskill, Pier 34, North River	42	.....	Do.
14	Steamer City of Kingston, Pier 34, North River	7	.....	Do.
14	Barge Charles Spear, Pier 35, North River	7	.....	Do.
14	Steamer Hasbrouck, Pier 35, North River	...	.....	
14	Steamer Ansonia, Pier 35, North River	7	.....	Do.

Inspections at piers, steamers, &c., New York—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by T. J. Herr, V. S.—Continued.			
1885.				
July 14	Steamer Redfield, Pier 35, North River	5	.....	Good.
21	Steamer Hasbrouck, Pier 35, North River	...	.....	
21	Steamer City of Kingston, Pier 34, North River	6	.....	Good.
21	Steamer Redfield, Pier 35, North River	11	.....	Fair.
21	Steamer Kaaterskill, Pier 34, North River	21	.....	Good.
21	Steamer Ansonia, Pier 35, North River	14	.....	Do.
21	Barge Charles Spear, Pier 35, North River	8	.....	Do.
28	Steamer Hasbrouck, Pier 35, North River	4	.....	Fair.
28	Steamer Kaaterskill, Pier 34, North River	26	.....	Good.
28	Steamer Redfield, Pier 35, North River	11	.....	Fair.
28	Steamer City of Kingston, Pier 34, North River	8	.....	Good.
28	Steamer Ansonia, Pier 35, North River	12	.....	Do.
28	Barge Charles Spear, Pier 35, North River	21	.....	Do.
Aug. 4	Steamer Redfield, Pier 35, North River	6	.....	Do.
4	Steamer Ansonia, Pier 35, North River	12	.....	Do.
4	Steamer Hasbrouck, Pier 35, North River	2	.....	Do.
4	Steamer City of Kingston, Pier 34, North River	15	.....	Do.
4	Steamer Kaaterskill, Pier 33, North River	44	.....	Do.
4	Barge Charles Spear, Pier 35, North River	1	.....	Do.
11	Steamer Redfield, Pier 35, North River	8	.....	Do.
11	Steamer Hasbrouck, Pier 35, North River	4	.....	Do.
11	Steamer Ansonia, Pier 35, North River	16	.....	Fair.
11	Barge Charles Spear, Pier 35, North River	17	.....	Good.
11	Steamer City of Kingston, Pier 34, North River	9	.....	Do.
11	Steamer Kaaterskill, Pier 33, North River	40	.....	Do.
18	Barge Charles Spear, Pier 35, North River	4	.....	Do.
18	Steamer City of Kingston, Pier 34, North River	11	.....	Do.
18	Steamer Kaaterskill, Pier 34, North River	37	.....	Do.
18	Steamer Redfield, Pier 35, North River	6	.....	Do.
18	Steamer Ansonia, Pier 35, North River	11	.....	Do.
18	Steamer Hasbrouck, Pier 35, North River	4	.....	Do.
25	Barge Charles Spear, Pier 35, North River	11	.....	Do.
25	Steamer City of Kingston, Pier 34, North River	1	.....	Do.
25	Steamer Kaaterskill, Pier 33, North River	51	.....	Do.
25	Steamer Hasbrouck, Pier 35, North River	...	.....	
25	Steamer Ansonia, Pier 35, North River	11	.....	Good.
25	Steamer Redfield, Pier 35, North River	4	.....	One good.
Sept. 1	....do	...	.....	
1	Steamer Ansonia, Pier 35, North River	8	.....	Fair.
1	Steamer Hasbrouck, Pier 35, North River	...	.....	
1	Barge Charles Spear, Pier 35, North River	5	.....	
1	Steamer City of Kingston, Pier 34, North River	8	.....	Good.
1	Steamer Kaaterskill, Pier 33, North River	31	.....	Do.
8	Barge Charles Spear, Pier 35, North River	12	.....	Do.
8	Steamer Kaaterskill, Pier 33, North River	27	.....	Do.
8	Steamer City of Kingston, Pier 34, North River	7	.....	Fair.
8	Steamer Hasbrouck, Pier 35, North River	1	.....	Good.
8	Steamer Ansonia, Pier 35, North River	11	.....	Fair.
8	Steamer Redfield, Pier 35, North River	2	.....	Good.
15	....do	2	.....	Do.
15	Steamer Hasbrouck, Pier 35, North River	...	.....	
15	Steamer Ansonia, Pier 35, North River	7	.....	
15	Steamer City of Kingston, Pier 34, North River	2	.....	Good.
15	Steamer Kaaterskill, Pier 33, North River	37	.....	Do.
15	Barge Charles Spear, Pier 35, North River	7	.....	Do.
22	Steamer Kaaterskill, Pier 33, North River	34	.....	Fair.
22	Steamer Redfield, Pier 35, North River	...	.....	
22	Steamer Hasbrouck, Pier 35, North River	...	.....	
22	Steamer City of Kingston, Pier 34, North River	3	.....	Good.
22	Steamer Ansonia, Pier 35, North River	11	.....	Do.
22	Barge Charles Spear, Pier 35, North River	10	.....	Do.
29	Steamer City of Kingston, Pier 34, North River	...	.....	Fair.
29	Steamer Hasbrouck, Pier 35, North River	7	.....	
29	Barge Charles Spear, Pier 35, North River	7	.....	Good.
29	Steamer Redfield, Pier 35, North River	10	.....	Do.
29	Steamer Ansonia, Pier 35, North River	...	.....	Fair.
29	Steamer Kaaterskill, Pier 33, North River	21	.....	Good.
Oct. 6	Steamer Redfield, Pier 35, North River	5	.....	Do.
6	Steamer Ansonia, Pier 35, North River	18	.....	Do.
6	Steamer Hasbrouck, Pier 35, North River	1	.....	Do.
6	Steamer City of Kingston, Pier 34, North River	10	.....	Do.
6	Steamer Kaaterskill, Pier 33, North River	28	.....	Fair.
6	Barge Charles Spear, Pier 35, North River	10	.....	Good.
13	Steamer Kaaterskill, Pier 33, North River	18	.....	Do.
13	Steamer Redfield, Pier 35, North River	1	.....	Do.
13	Steamer Ansonia, Pier 35, North River	17	.....	Fair.

Inspections at piers, steamers, &c., New York—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by T. J. Herr, V. S.—Continued.			
1885.				
Oct. 18	Steamer Hasbrouck, Pier 35, North River	6	.....	Good.
13	Steamer City of Kingston, Pier 34, North River	9	.....	Do.
13	Barge Charles Spear, Pier 35, North River	20	.....	Do.
20	Steamer Hasbrouck, Pier 35, North River	2	.....	Do.
20	Barge Charles Spear, Pier 35, North River	16	.....	Fair.
20	Steamer Kaaterskill, Pier 33, North River	25	.....	Good.
20	Steamer Redfield, Pier 35, North River	.....	.....	
20	Steamer Ansonia, Pier 35, North River	17	.....	Fair.
20	Steamer City of Kingston, Pier 34, North River	7	.....	Good.
27	Steamer Hasbrouck, Pier 35, North River	.....	.....	
27	Steamer Ansonia, Pier 35, North River	11	.....	Do.
27	Barge Charles Spear, Pier 35, North River	15	.....	Do.
27	Steamer City of Kingston, Pier 34, North River	9	.....	Fair.
27	Steamer Redfield, Pier 35, North River	.....	.....	
27	Steamer Kaaterskill, Pier 33, North River	27	.....	Good.
Nov. 3	Steamer City of Kingston, Pier 34, North River	10	.....	Do.
3	Steamer Hasbrouck, Pier 35, North River	.....	.....	
3	Steamer Kaaterskill, Pier 33, North River	11	.....	Fair.
3	Steamer Redfield, Pier 35, North River	.....	.....	
3	Steamer Ansonia, Pier 35, North River	11	.....	Do.
3	Barge Charles Spear, Pier 35, North River	11	.....	Good.
10	Steamer Ansonia, Pier 35, North River	16	.....	Do.
10	Steamer Kaaterskill, Pier 33, North River	29	.....	Do.
10	Steamer Redfield, Pier 35, North River	.....	.....	
10	Steamer Hasbrouck, Pier 35, North River	.....	.....	
10	Steamer City of Kingston, Pier 34, North River	11	.....	Fair.
10	Barge Charles Spear, Pier 35, North River	18	.....	Do.
17	Steamer City of Kingston, Pier 34, North River	6	.....	Do.
17	Steamer Hasbrouck, Pier 35, North River	.....	.....	
17	Steamer Redfield, Pier 35, North River	2	.....	Good.
17	Steamer Ansonia, Pier 35, North River	18	.....	Fair.
17	Steamer Kaaterskill, Pier 33, North River	27	.....	Good.
17	Barge Charles Spear, Pier 35, North River	11	.....	Do.
24	Steamer Ansonia, Pier 35, North River	10	.....	Do.
24	Steamer Hasbrouck, Pier 35, North River	.....	.....	
24	Steamer Kaaterskill, Pier 33, North River	7	.....	Do.
24	Steamer Redfield, Pier 35, North River	.....	.....	
24	Steamer City of Kingston, Pier 34, North River	2	.....	Fair.
24	Barge Charles Spear, Pier 35, North River	4	.....	Good.
Dec. 1	Steamer Redfield, Pier 35, North River	4	.....	Do.
1	Steamer City of Kingston, Pier 34, North River	7	.....	Do.
1	Steamer Kaaterskill, Pier 33, North River	20	.....	Fair.
1	Steamer Hasbrouck, Pier 35, North River	.....	.....	
1	Steamer Ansonia, Pier 35, North River	12	.....	Good.
1	Barge Charles Spear, Pier 35, North River	9	.....	Do.
8	Steamer Kaaterskill, Pier 33, North River	30	.....	Do.
8	Steamer City of Kingston, Pier 34, North River	8	.....	Fair.
8	Barge Charles Spear, Pier 35, North River	7	.....	Good.
8	Steamer Hasbrouck, Pier 35, North River	.....	.....	
8	Steamer Ansonia, Pier 35, North River	33	.....	Fair.
8	Steamer Redfield, Pier 35, North River	.....	.....	
15	.....do	.....	.....	
15	Steamer Ansonia, Pier 35, North River	14	.....	Good.
15	Steamer Hasbrouck, Pier 35, North River	4	.....	Do.
15	Barge Charles Spear, Pier 35, North River	10	.....	Fair.
15	Steamer Kaaterskill, Pier 33, North River	18	.....	Good.
15	Steamer City of Kingston, Pier 34, North River	4	.....	Do.

Inspections on Long Island, New York.

	Inspections by L. McLean, V. S.			
1885.				
June 16	Samuel Gordon, Long Island City, Queens County	36	6	Stable, bad: animals, fair.
17	Mrs. White, Long Island City, Queens County	18	1	Do.
24	A. S. Sonn, Long Island City, Queens County	28	2	Do.
24	L. Stevenson, Long Island City, Queens County	10	2	Do.
24	John T. Gordon, Long Island City, Queens County	28	3	Do.
26	I. Rickhard, Long Island City, Queens County	20	1	Do.
27	D. Gill, Flatbush, Kings County	3	1	Stable, bad; animals poor.

Inspections on Long Island, New York—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung plague.	Condition.
	Inspections by L. McLean, V. S.—Continued.			
1885.				
July 11	Owens Hiekman, New Lots, Kings County	17	4	Stable, bad; animals, fair.
11	Charles Ryan, New Lots, Kings County	49	2	Fair.
11	Ed. Ryan, New Lots, Kings County	21	2	Do.
11	F. I. Ryan, New Lots, Kings County	55	3	Bad.
11	S. Schauss, New Lots, Kings County	53	2	Do.
11	M. H. Van Size, New Lots, Kings County	38	4	Fair.
11	Little Sisters of the Poor, Brooklyn, Kings County	3	1	Good.
11	M. N. Van Size, New Lots, Kings County	38	4	Fair.
11	Little Sisters of the Poor, Brooklyn, Kings County	3	1	Good.
Aug. 15	A. Martin, Brooklyn, Kings County	14	1	Fair.
15	Isaac Morse, Brooklyn, Kings County	2	1	Do.
15	Unknown, Brooklyn, Kings County	....	2	
29	Charles Ryan, New Lots, Queens County	45	.....	Do.
29	August Whitman, Brooklyn, Kings County	3	.....	Bad.
29	Charles Mehill, New Lots, Queens County	32	.....	Fair.
29	William Cartwill, New Lots, Queens County	11	.....	Bad.
29	R. McDonald, Brooklyn, Kings County	20	.....	Do.
29	Unknown, Brooklyn, Kings County	....	4	
Sept. 5	Charles Vail, Atlanticville, Suffolk County	5	3	Fair.
5	Unknown, Brooklyn, Kings County	....	4	
19	James Lyons, Newtown, Queens County	60	3	Very bad.
19	I. Combs, Ridgewood, Queens County	40	1	Fair.
19	Patrick Lyons, Newtown, Queens County	75	4	Very bad.
19	H. Berean, Brooklyn, Kings County	....	3	
19	Unknown, Brooklyn, Kings County	....	2	
19	Jos. Smalleman, Brooklyn, Kings County	7	2	Bad.
26	William Ryan, New Lots, Queens County	17	3	Fair.
26	Thomas McGee, Bowrowville, Queens County	55	3	Stable, very bad; animals, fair.
26	George Steblin, Bowrowville, Queens County	28	1	Do.
26	Lewis Gimpel, Bowrowville, Queens County	27	2	Fair.
26	Charles Whitson, Bowrowville, Queens County	26	2	Do.
26	Henry Gimpel, Bowrowville, Queens County	18	2	Do.
26	Frank Ryan, New Lots, Queen County	39	2	Do.
26	Unknown, Brooklyn, Kings County	....	3	
Oct. 3	F. Davis, Bowrowville, Queens County	29	3	Fair.
3	Dennis Hacket, Bowrowville, Queens County	13	1	Do.
3	Henry Crane, Bowrowville, Queens County	7	4	Stable, bad; animals, fair.
3	C. H. Lutz, Bowrowville, Queens County	18	4	Fair.
3	Mrs. O'Connor, Bowrowville, Queens County	28	.....	Do.
3	Unknown, Brooklyn, Kings County	....	3	
15	Charles Ryan, New Lots, Queens County	48	2	Stable, bad; animals, fair.
15	Offal dock, Brooklyn, Kings County	....	2	
15	A. Koller, Ridgewood, Queens County	24	2	Fair.
15	Ed. Hackman, New Lots, Queens County	18	3	Bad.
15	Unknown, Brooklyn, Kings County	....	5	

Inspections in New Jersey.

	Inspections by Rowland & Hawk, V. S.			
1885.				
Jan. 3	C. W. Curney, near Englewood	7	.....	Good.
3	Fred. Medler, near Farvonia	13	.....	Do.
3	J. J. Collier, near Farvonia	12	.....	Do.
3	Alex. McClamican, Fairview	12	.....	Do.
5	M. Davis, Orange	5	.....	Do.
5	I. S. Williams, Orange	36	.....	Do.
5	Cris. Wardell, Orange	9	.....	Do.
5	M. Burk, Joice street, Orange	7	.....	Do.
5	Patrick Linch, Orange	7	.....	Do.
5	Locklie Burns, Orange	2	.....	Do.
5	J. Vogal, Orange	5	.....	Do.
5	Michael Burns, Jefferson street, Orange	28	.....	Do.
5	H. Mahulin, Orange	9	.....	Do.
7	F. E. Ulitz, near Marion	....	2	Do.
7	John Culver, Marion	....	1	Bad.
7	M. Shirdler, near Marion	6	.....	Good.
8	William Fink, Guttenberg	8	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Rowland & Hawk, V. S.—Continued.			
1885.				
Jan. 8	C. Alfelix, People's street, Guttenberg	26	14	Stables, filthy; animals, very bad.
8	William Stelling, Guttenberg	14	.....	Good.
8	C. Breckmayer, Guttenberg	14	.....	Do.
8	John Claransy, Hudson County	8	.....	Do.
8	J. Moor, Hudson County	2	.....	Do.
8	C. Gemmer, Hudson County	11	.....	Do.
8	John Knapp, Hudson County	3	.....	Do.
9	Fred. Wood, Hudson County	32	.....	Do.
9	M. Went, Guttenberg, Hudson County	14	.....	Do.
9	George Ball, Guttenberg, Hudson County	5	.....	Do.
9	J. Hofferman, Ferry Road, Hudson County	1	.....	Do.
9	Mrs. Dempsey, Bergen County	5	.....	Do.
10	M. Mooney, Hoboken, Hudson County	12	.....	Do.
10	M. Rainey, Weehawken, Hudson County	11	.....	Do.
10	Jos. Warrington, Grand street, Hoboken, Hudson County	13	.....	Do.
10	Mrs. J. Torpey, Grand street, Hoboken, Hudson County	8	.....	Do.
10	Patrick Folley, Hoboken, Hudson County	4	.....	Do.
10	Michael Torpey, Hoboken, Hudson County	9	.....	Do.
10	Harwitz & Linnthal, Weehawken, Hudson County	56	.....	Do.
12	M. Harrison, Orange Mountain, Essex County	27	.....	Do.
12	Edward Williams, Orange Mountain, Essex County	4	.....	Do.
12	John Smith, Orange Mountain, Essex County	8	.....	Do.
12	J. G. Anderson, Orange Mountain, Essex County	7	.....	Do.
12	H. D. Oliphant, Orange Mountain, Essex County	15	.....	Do.
12	Mrs. Mary Hopkins, Orange Mountain, Essex County	4	.....	Do.
12	Charles Fenslip, Orange Mountain, Essex County	4	.....	Do.
12	S. Vinsent, Orange Mountain, Essex County	4	.....	Do.
12	Henry Hines, Orange Mountain, Essex County	15	.....	Do.
12	T. Tinsant, Orange Mountain, Essex County	36	.....	Do.
12	Andrew Sultz, Valley road, Orange Mountain, Essex County	14	.....	Do.
13	Edgar Condit, Valley road, Orange Mountain, Essex County	8	.....	Do.
13	W. N. Williams, Valley road, Orange Mountain, Essex Co	5	.....	Do.
13	Orlando Williams, Valley road, Orange Mountain, Essex Co	24	.....	Do.
13	A. Bodensire, Valley road, Orange Mountain, Essex County	4	.....	Do.
13	W. Ringer, Orange Mountain, Essex County	3	.....	Do.
13	J. G. Atkinson, Orange Mountain, Essex County	51	.....	Very fine.
13	Lewis Lightham, Orange Mountain, Essex County	6	.....	Good.
13	John Curdey, Orange Mountain, Essex County	4	.....	Do.
14	J. Brown, Maplewood, Essex County	6	.....	Do.
14	Abner Reeves, Maplewood, Essex County	9	.....	Do.
14	Thomas A. Reeves, Maplewood, Essex County	8	.....	Do.
14	C. Herley, Maplewood, Essex County	3	.....	Do.
14	M. Cox, Maplewood, Essex County	3	.....	Do.
14	D. Brison, Millburn, Essex County	46	.....	Do.
14	Lewis Keller, Millburn, Essex County	23	.....	Do.
14	F. C. Farley, Short Hills, Essex County	40	.....	Stables, good; animals, fine.
16	Fylander Ball, Hilton, Essex County	26	.....	Good.
16	R. H. Ball, Hilton, Essex County	15	.....	Do.
16	William Howkins, Hilton, Essex County	13	.....	Do.
16	W. B. Allay, Hilton, Essex County	16	.....	Do.
16	Christopher Edge, Irvington, Essex County	10	.....	Do.
16	T. Burnetts, Irvington, Essex County	12	.....	Do.
17	John Dagner, Mill street, Bellville, Essex County	9	.....	Do.
17	Mrs. Jackson, Bellville, Essex County	7	.....	Do.
17	John Riley, Bellville, Essex County	18	.....	Do.
17	George H. Stager, Avondale, Essex County	18	.....	Do.
17	M. Morris, Avondale, Essex County	2	.....	Do.
17	Mr. Phillips, Avondale, Essex County	4	.....	Do.
17	M. Nugent, Woodside, Essex County	2	.....	Do.
17	J. C. Post, Woodside, Essex County	3	.....	Do.
17	W. R. Travers, Woodside, Essex County	12	.....	Do.
17	Jacob Killman, Woodside, Essex County	9	.....	Do.
17	Patrick Manley, Woodside, Essex County	15	.....	Do.
	Inspections by W. B. E. Miller, V. S.			
Jan. 2	Samuel N. Rhoades, Mount Ephraim, Camden County	45	2	Fair.
3	G. H. Stewart, Haddonfield, Camden County	10	.....	
5	E. N. Cohm, Bergen Point, Hudson County	4	.....	
5	John Smith, Bergen Point, Hudson County	8	.....	
5	George Phieffer, Bergen Point, Hudson County	10	.....	
6	George Mooney, Elizabethport, Hudson County	26	.....	
6	Amos Bousell, Elizabethport, Hudson County	18	.....	
6	Mary Sellers, Elizabethport, Hudson County	13	.....	Good.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by W. B. E. Miller, V. S.—Continued.			
1885.				
Jan. 7	Edward Roberts, Elizabethport, Hudson County	12	.....	Good.
7	Conrad Schnover Elizabethport, Hudson County	21	.....	Do.
8	H. H. Pine, Elizabethport, Hudson County	34	.....	Do.
8	Amos Taylor, Elizabethport, Hudson County	38	.....	Do.
8	Mary Saul, Elizabethport, Hudson County	2	.....	Do.
9	Charles Godfrey, Elizabethport, Hudson County	12	.....	Do.
9	Edward Godfrey, Elizabethport, Hudson County	14	.....	Do.
9	John Fitzgerald, Elizabethport, Hudson County	23	.....	Do.
10	Mary Mooney, Elizabethport, Hudson County	4	.....	Do.
10	Thomas Boyle, Elizabethport, Hudson County	4	.....	Do.
10	John Brown, Elizabethport, Hudson County	8	.....	Do.
10	George Brown, Elizabethport, Hudson County	5	.....	Do.
12	E. W. Coffin, Glendale, Camden County	18	.....	Excellent.
13	Samuel Rhoades, Mount Ephraim, Camden County	43	.....	Good.
14	James Jaggars, Lyons Farm, Union County	4	.....	Do.
14	Elijah Jaggars, Lyons Farm, Union County	18	1	Stables, filthy; animals, poor.
14	Mrs. Winans, Lyons Farm, Union County	10	2	Fair.
14	James Chapran, Lyons Farm, Union County	11	.....	Stables, filthy; animals, poor.
14	John Lumson, Lyons Farm, Union County	17	.....	Good.
15	M. A. Baker, Lyons Farm, Union County	11	.....	Do.
15	Jos. Forthuber, Irvington, Union County	2	.....	Do.
15	Josiah N. Carter, Irvington, Union County	8	.....	Do.
15	Sylvester Baldwin, Irvington, Union County	31	.....	Do.
16	Thomas Fitzpatrick, Irvington, Union County	50	.....	Do.
16	William Chapman, New Salem, Union County	15	.....	Stables, fair; animals, good.
16	A. M. Baker, New Salem, Union County	10	.....	Good.
16	John Bennett, New Salem, Union County	7	.....	Stables, filthy; animals, bad.
	Inspections by Rowland & Hawk, V. S.			
Jan. 20	S. McKlowsky, Secaucus, Hudson County	....	.....	Good.
20	Mr. Litherman, jr., Snake Hill, Hudson County	78	.....	Stables, fair; animals, good.
21	J. P. Outwater, Snake Hill, Hudson County	14	.....	Good.
21	Henry Smith, Hackensack, Bergen County	16	.....	Do.
21	John F. Festner, Hackensack, Bergen County	18	.....	Do.
21	John Clauson, Little Ferry, Bergen County	23	.....	Do.
22	C. G. Foster, Little Ferry, Bergen County	93	.....	Stables, fair; animals, fine.
22	Christopher Moody, Morristown, Morris County	28	.....	Good.
22	J. J. Carry, Morristown, Morris County	9	.....	Do.
22	Zeneth Smyth, Morristown, Morris County	28	.....	Do.
23	A. D. Whitehead, Morristown, Morris County	12	.....	Do.
23	Theodore Sare, Morristown, Morris County	20	.....	Do.
23	S. S. Pierson, Morristown, Morris County	9	.....	Do.
23	S. F. Pierson, Morristown, Morris County	7	.....	Do.
23	George W. Tuttle, Morristown, Morris County	16	.....	Do.
23	P. H. Lane, Morristown, Morris County	19	.....	Do.
24	William Walter Phelps, Hackensack, Bergen County	40	.....	Do.
24	Charles Cunzby, Hackensack, Bergen County	4	.....	Do.
24	William Blank, Hackensack, Bergen County	6	.....	Do.
24	M. Coe, Hackensack, Bergen County	10	.....	Do.
24	Henry Cooper, Hackensack, Bergen County	52	.....	Do.
26	Jacob J. Rosier, Hackensack, Bergen County	9	.....	Do.
26	Westley Strong, Hackensack, Bergen County	17	.....	Do.
26	J. Van Sorn, Hackensack, Bergen County	16	.....	Do.
26	John Zabriske, Hackensack, Bergen County	30	.....	Do.
26	J. H. Ackerman, Hackensack, Bergen County	5	.....	Do.
26	James Philips, Hackensack, Bergen County	4	.....	Do.
26	C. K. Christie, Hackensack, Bergen County	7	.....	Do.
26	M. Van Buskirk, Riverview, Bergen County	7	.....	Do.
26	Ralph Voorhees, Riverview, Bergen County	10	.....	Do.
26	S. Voorhees, Riverview, Bergen County	4	.....	Do.
26	G. Van Order, Riverview, Bergen County	15	.....	Do.
27	Jacob Hopper, Hackensack, Bergen County	8	.....	Do.
27	William Bramenburg, Hackensack, Bergen County	6	.....	Do.
27	William Arnis, Hackensack, Bergen County	8	.....	Do.
27	Isaac Goft, Hackensack, Bergen County	7	.....	Do.
27	Robert Williams, Hackensack, Bergen County	9	.....	Do.
27	Samuel Bussum, Hackensack, Bergen County	6	.....	Do.
27	M. Van Deen, Hackensack, Bergen County	10	.....	Do.
27	Henry Brinkroff, Hackensack, Bergen County	3	.....	Do.
27	H. Brambo, Hackensack, Bergen County	9	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Rowland & Hawk, V. S.—Continued.			
1885.				
Jan. 27	John Amos, Colsteadt, Bergen County	3	.....	Good.
27	Abraham Feriance, Colsteadt, Bergen County	16	.....	Do.
27	Stewart Winslow, Colsteadt, Bergen County	10	.....	Do.
27	David Green, Colsteadt, Bergen County	14	.....	Do.
28	E. Kingsley, Arlington, Essex County	3	.....	Do.
28	Edward Sebatuse, Arlington, Essex County	16	.....	Do.
28	George Halk, Arlington, Essex County	20	.....	Do.
28	H. Schyler, Arlington, Essex County	9	.....	Do.
28	E. Sandfield, Arlington, Essex County	5	.....	Do.
28	John Boyd, Arlington, Essex County	26	.....	Do.
28	Joseph Riderburg, Arlington, Essex County	8	.....	Do.
28	William Mitchell, Arlington, Essex County	15	.....	Do.
28	John Roach, Arlington, Essex County	20	.....	Do.
28	Patrick Carry, Arlington, Essex County	7	.....	Do.
28	Patrick Burns, Arlington, Essex County	2	.....	Do.
28	F. Forman, Arlington, Essex County	8	.....	Do.
28	Thomas Doyle, Arlington, Essex County	9	.....	Do.
29	James Anderson, West Newark, Essex County	3	.....	Do.
29	Mrs. O'Leary, West Newark, Essex County	3	.....	Do.
29	John Lions, West Newark, Essex County	4	.....	Do.
29	William Gogle, West Newark, Essex County	12	.....	Do.
29	M. Caesar, West Newark, Essex County	16	.....	Do.
29	Martin Attleman, West Newark, Essex County	5	.....	Do.
29	Jacob Martin, West Newark, Essex County	6	.....	Do.
31	Mr. Yost, Orange Mountain, Essex County	4	.....	Do.
31	John Crady, Orange Mountain, Essex County	4	.....	Do.
31	P. A. Williams, Orange Mountain, Essex County	4	.....	Do.
31	Charles Irving, Orange Mountain, Essex County	5	.....	Do.
31	S. Conkling, Orange Mountain, Essex County	2	.....	Do.
31	Mrs. Delia Bond, Orange Mountain, Essex County	2	.....	Do.
31	Martin Williams, Orange Mountain, Essex County	2	.....	Do.
31	J. H. Condeilt, Orange Mountain, Essex County	14	.....	Do.
31	William Harrison, Orange Mountain, Essex County	4	.....	Do.
31	A. H. Walker, Orange Mountain, Essex County	17	.....	Do.
31	Jackson Hire, Roseland, Essex County	17	.....	Do.
31	William Davenport, Roseland, Essex County	4	.....	Do.
	Inspections by Miller & Dyer, V. S.			
Jan. 30	B. S. Spinning, near Elizabeth, Union County	8	.....	Good.
30	George Bower, near Elizabeth, Union County	11	.....	Do.
30	John Guggons, near Elizabeth, Union County	17	.....	Do.
30	Thomas Gallagher, near Elizabeth, Union County	14	.....	Do.
30	W. A. Tucker, near Elizabeth, Union County	14	.....	Do.
30	G. W. Disbon, near Elizabeth, Union County	33	.....	Do.
31	Patrick Gregg, near Elizabeth, Union County	36	.....	Fair.
31	William Carmody, near Elizabeth, Union County	10	.....	Good.
31	Dr. Rols, near Elizabeth, Union County	40	.....	Do.
Feb. 2	Jos. Dracers, near Elizabeth, Union County	15	.....	Do.
2	Edward Magie, near Union, Union County	12	.....	Do.
2	Henry Krouse, Linden Terrace, Union County	26	.....	Do.
2	Edwin Mirror, near Elizabeth, Union County	4	.....	Do.
2	Mrs. Belle Wohlbruck, near Elizabeth, Union County	13	.....	Do.
3	J. L. Benedict, road to Union, Union County	35	.....	Do.
3	Christian Bangert, Union road, Union County	9	.....	Fair.
3	John W. W. Stearns, Union road, Union County	12	.....	Good.
3	James Higgins, Union road, Union County	12	.....	Do.
3	F. & D. C. Crane, Union road, Union County	32	.....	Do.
3	John Williams, Union road, Union County	4	.....	Do.
3	Patrick Quinn, Union road, Union County	6	.....	Do.
3	Robert Laing, Union road, Union County	6	.....	Fair.
3	John O. Magie & Sons, near Elizabeth, Union County	54	.....	Good.
4	James Nailor, near Elizabeth, Union County	8	.....	Do.
4	Frazier Hairns, near Elizabeth, Union County	6	.....	Do.
4	Henry Compton, near Elizabeth, Union County	8	.....	Do.
4	William F. Harris, near Elizabeth, Union County	4	.....	Do.
4	D. W. Sayre, near Elizabeth, Union County	23	.....	Do.
4	L. E. Williams, near Elizabeth, Union County	...	.....	Do.
5	E. G. Gathwaite, near Union, Union County	3	.....	Fair.
5	Patrick McManer, near Union, Union County	9	.....	Do.
5	Michael Imlingen, near Union, Union County	4	.....	Good.
5	George Hairns, near Union, Union County	5	.....	Do.
5	Louis Wenz, near Union, Union County	14	.....	Do.
6	A. C. Miller, near Union, Union County	8	.....	Do.
6	D. M. Potter, near Union, Union County	9	.....	Do.
6	William L. Lindsay, near Union, Union County	11	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
Feb. 6	M. Newman, near Roselle, Union County	31	.....	Good.
6	Edward Murphy, near Roselle, Union County	17	.....	Do.
6	Elias W. Stiles, near Union, Union County	4	.....	Fair.
6	Stephen T. Boker, near Union, Union County	15	.....	Do.
6	Gaines Tipping, near Union, Union County	5	.....	Good.
6	N. W. Parcell, near Union, Union County	16	.....	Do.
6	Colonel Kain, near Union, Union County	6	.....	Fair.
6	J. P. Miller, near Roselle, Union County	12	.....	Good.
7	George Doty, near Elizabeth, Union County	18	.....	Fair.
7	J. M. Gregg, near Elizabeth, Union County	18	.....	Good.
7	Olive Crane, near Elizabeth, Union County	19	1	Fair.
7	Stephen J. Freas, near Elizabeth, Union County	16	.....	Good.
7	James Wade, near Elizabeth, Union County	22	.....	Do.
7	Lewis Wade, near Elizabeth, Union County	11	.....	Fair.
7	Robert Miller, near Elizabeth, Union County	9	.....	Good.
7	Lewis Williams, near Elizabeth, Union County	20	.....	Fair.
7	Uriah Bennett, near Mount Ephraim, Union County	16	.....	Do.
9	J. B. Lippincott, near Mount Ephraim, Union County	45	1	Do.
9	S. H. Rhoades, near Mount Ephriam, Union County	44	2	Good.
9	O. Woodniff, near Elizabeth, Union County	27	.....	Do.
9	John Pohlman, near Elizabeth, Union County	14	.....	Do.
9	James C. Baker, near Elizabeth, Union County	9	.....	Do.
9	L. E. Meeker, near Elizabeth, Union County	6	.....	Do.
9	C. E. Winans, near Elizabeth, Union County	12	.....	Do.
9	Mr. Bennett, near Elizabeth, Union County	8	.....	Do.
10	John Weemar, near Elizabeth, Union County	5	.....	Stable, very filthy; animals, very poor.
10	D. Blake Bonnett, near Elizabeth, Union County	27	.....	Good.
10	John Welsh, near Elizabeth Port, Union County	8	.....	Do.
10	John Edgworth, near Elizabeth Port, Union County	32	.....	Do.
10	William A. Baker, near Elizabeth Port, Union County	9	.....	Fair.
11	George W. Baker, near Linden, Union County	7	.....	Do.
11	M. O. Winans, near Linden, Union County	28	12	Do.
11	Edward S. Newberry, near Elizabeth, Union County	2	.....	Do.
11	Michael Brady, near Elizabeth, Union County	1	.....	Do.
11	George McGillvery, near Elizabeth, Union County	9	.....	Do.
11	Thomas McCandless, near Elizabeth, Union County	20	3	Do.
11	Henry McCandless, near Elizabeth, Union County	17	.....	Good.
11	John G. Snider, near Elizabeth, Union County	29	.....	Stables, fair; animals, good.
12	Morse Brothers, near Moore's Mills, Union County	27	2	Good.
12	Charles Conrad, near Elizabeth Port, Union County	3	.....	Stables, filthy; animals, fair.
12	Charles Coote, near Elizabeth Port, Union County	7	.....	Good.
12	Joseph O'Brien, near Elizabeth Port, Union County	5	.....	Very good.
12	Ferdinand Blaneke, Linden, Union County	116	.....	Good.
13	Meeker Wood, Linden, Union County,	6	.....	Fair.
13	John Willeck, Linden, Union County	32	.....	Stables, very poor; animals, very filthy.
13	William J. Barnett, near Linden, Union County	6	.....	Good.
13	Edward Crane, near Cranford, Union County	2	.....	Do.
14	A. Winans, near Cranford, Union County	5	.....	Do.
14	Benj. Westwelt, near Cranford, Union County	8	.....	Do.
14	Ferdinand Meyer, near Cranford, Union County	9	.....	Stables, very filthy: animals, very poor.
14	John Mack, near Cranford, Union County	1	.....	Good.
14	Theodore Vreeland, near Cranford, Union County	7	.....	Do.
	Inspections by Rowland & Hawk, V. S.			
Feb. 2	Hiram Dodd, Roseland, Essex County	11	.....	Good.
2	B. Harcky, Roseland, Essex County	22	.....	Do.
2	R. Decamp, Roseland, Essex County	5	.....	Do.
2	Martin Williams, Roseland, Essex County	12	.....	Do.
2	James Harrison, Roseland, Essex County	5	.....	Do.
2	William Gould, Roseland, Essex County	16	.....	Do.
2	George Gould, Roseland, Essex County	12	.....	Do.
2	M. Matineur, Roseland, Essex County	14	.....	Do.
2	John Miller, Roseland, Essex County	7	.....	Do.
3	Jacob Clitnips, Jersey City Heights, Hudson County	12	.....	Do.
3	Ernest Abbametins, Jersey City Heights, Hudson County	11	.....	Do.
4	M. Fernbeyer, Secaucus, Hudson County	89	.....	Fair.
4	George Harms, Secaucus, Hudson County	8	.....	Do.
5	John Linch, Marion, Hudson County	18	1	Good.
5	Mrs. Johanna Carry, Marion, Hudson County	9	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Rowland & Hawk, V. S.—Continued.			
1885.				
Feb. 5	William Blacher, Marion, Hudson County	9	.....	Good.
5	George Rich, Marion, Hudson County	4	.....	Do.
5	John Birch, Marion, Hudson County	14	.....	Do.
6	Brist & Son, Pamapo, Hudson County	12	.....	Do.
6	John Hannan, Pamapo, Hudson County	7	.....	Do.
6	Frank Molian, Pamapo, Hudson County	17	.....	Do.
6	John Mulcarty, Pamapo, Hudson County	30	.....	Do.
6	Mrs. Ellen Hearley, Pamapo, Hudson County	11	.....	Do.
6	Jacob Kepler, Pamapo, Hudson County	12	.....	Do.
6	M. Mesner, Pamapo, Hudson County	12	.....	Do.
6	R. Haiber, Pamapo, Hudson County	9	.....	Do.
6	Adam Martin, Pamapo, Hudson County	16	.....	Do.
9	C. D. Conover, Pine Brook, Hudson County	3	.....	Do.
9	A. Harrison, Pine Brook, Hudson County	28	1	Do.
9	Henry Baccus, near Pine Brook, Essex County	11	.....	Do.
9	Joshua Francisco, near Pine Brook, Essex County	38	.....	Do.
9	Newton Candfield, near Pine Brook, Essex County	12	.....	Do.
10	C. B. Kent, Pine Brook, Essex County	13	.....	Do.
10	H. W. Crain, Pine Brook, Essex County	20	.....	Do.
10	James Pier, Pine Brook, Essex County	9	.....	Do.
10	Henry Van Dine, Pine Brook, Essex County	11	.....	Do.
10	Dennis O'Callahan, Pine Brook, Essex County	72	30	Not good.
10	J. D. Crain, Pine Brook, Essex County	7	.....	Good.
12	John Supall, Irvington, Essex County	10	.....	Do.
12	A. D. Denman, Milburn, Essex County	7	.....	Do.
12	Isaac Denman, Milburn, Essex County	5	.....	Do.
12	Samuel Casams, White Oak Ridge, Essex County	10	.....	Do.
12	Samuel Parsons, White Oak Ridge, Essex County	15	.....	Do.
12	A. S. Ross, White Oak Ridge, Essex County	12	.....	Do.
12	George Reeves, Washington Place, Essex County	6	.....	Do.
12	E. Budd, Washington Place, Essex County	30	.....	Do.
12	Charles Moran, Washington Place, Essex County	16	.....	Do.
12	James H. Brown, Washington Place, Essex County	30	.....	Do.
13	Mrs. Condidt, Short Hills, Essex County	23	.....	Do.
13	Francis Supus, Short Hills, Essex County	12	.....	Do.
13	A. L. Jacobus, Short Hills, Essex County	26	1	Fair.
13	Hoyt Reeves, Short Hills, Essex County	18	.....	Good.
13	Anthony Jacobus, Short Hills, Essex County	11	.....	Do.
13	Mrs. Condidt, Short Hills, Essex County	23	.....	Do.
14	I. Crain, Short Hills, Essex County	35	.....	Do.
14	F. W. Meeker, Short Hills, Essex County	46	.....	Do.
14	R. W. Way, Short Hills, Essex County	14	.....	Do.
14	H. Reeves, Short Hills, Essex County	12	.....	Do.
14	J. A. Alling, Short Hills, Essex County	9	.....	Do.
16	Barney Martin, near Madison, Morris County	8	.....	Do.
17	Edward Roseball, near Madison, Morris County	8	.....	Do.
17	Mrs. Tredwell, near Madison, Morris County	46	.....	Do.
17	Mrs. Serumps, near Madison, Morris County	44	.....	Do.
17	H. Van Wagner Mires, near Madison, Morris County	57	.....	Do.
18	John Sucray, Orange Valley, Essex County	7	.....	Do.
18	Henry Rechie, Orange Valley, Essex County	10	.....	Do.
18	John Hawk, Orange Valley, Essex County	18	.....	Do.
18	Thomas McQuaide, Orange Valley, Essex County	8	.....	Do.
18	J. J. Farley, Northfield, Morris County	14	.....	Do.
18	Lewis Miller, Northfield, Morris County	3	.....	Do.
18	M. Edwards, Northfield, Morris County	18	.....	Do.
18	George B. Little, Livingston, Morris County	16	.....	Do.
18	S. P. Ralphburn, Livingston, Morris County	7	.....	Do.
18	Jacob Gergenhern, Livingston, Morris County	16	.....	Do.
19	George W. Rinehart, Livingston, Essex County	16	.....	Do.
19	Lewis Weemer, Livingston, Morris County	6	.....	Do.
19	A. K. Ely, Livingston, Morris County	10	.....	Do.
19	Nelson Smith, Livingston, Morris County	7	.....	Do.
19	Margaret Britzel, Livingston, Morris County	7	.....	Do.
19	George W. Moorhouse, Livingston, Morris County	26	.....	Do.
19	Henry C. McBrair, Livingston, Morris County	23	.....	Do.
19	Levard Kitchell, Livingston, Morris County	5	.....	Do.
19	W. A. Crain, Livingston, Morris County	12	.....	Do.
20	S. M. Black, Hanover, Morris County	7	.....	Do.
20	Joseph Kitchell, Hanover, Morris County	12	.....	Do.
20	D. T. Cook, Hanover, Morris County	20	.....	Do.
20	Elizabeth Hopping, Hanover, Morris County	14	.....	Do.
20	William Ely, Afton, Morris County	38	.....	Do.
20	C. B. Meeker, Afton, Morris County	8	.....	Do.
20	Peter McDermott, Afton, Morris County	11	.....	Do.
20	H. Corry, Afton, Morris County	5	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Rowland & Hawk, V. S.—Continued.			
1885.				
Feb. 20	Samuel A. Richard, Afton, Morris County	3	.....	Good.
20	James Hallard, Afton, Morris County	6	.....	Do.
20	A. C. Hopping, Afton, Morris County	3	.....	Do.
20	Anthony Hopping, Afton, Morris County	2	.....	Do.
21	William James, Afton, Morris County	9	.....	Do.
21	Robert Blake, Afton, Morris County	45	.....	Do.
21	R. M. Hancock, Madison, Morris County	21	.....	Do.
21	R. Tucker, Madison, Morris County	7	.....	Do.
21	M. Hancock, Madison, Morris County	5	.....	Do.
21	B. F. Napp, Madison, Morris County	6	.....	Do.
21	A. S. Sair, Madison, Morris County	11	.....	Do.
	Inspections by Miller & Dyer, V. S.			
Feb. 16	John Eyerhart, Amonville, Union County	3	.....	Good.
16	J. B. Bonwell, Amonville, Union County	2	.....	Do.
16	James Woodruff, Amonville, Union County	2	.....	Do.
16	T. C. Taetonette, Amonville, Union County	15	.....	Do.
16	James Headley, Amonville, Union County	10	.....	Do.
16	E. G. Brown, Amonville, Union County	15	.....	Do.
16	Stephen Brown, Amonville, Union County	13	.....	Do.
16	William C. Headley, Headleyville, Union County	8	.....	Do.
16	William H. Brown, Headleyville, Union County	4	.....	Do.
16	George & Jacob Vaith, Headleyville, Union County	7	.....	Do.
16	Morris Allen, Headleyville, Union County	4	.....	Do.
17	T. Gray, Amonville, Union County	19	.....	Do.
17	Dennis Long, Amonville, Union County	18	.....	Do.
17	E. Day, Amonville, Union County	26	.....	Do.
17	Julia Woodbury, Amonville, Union County	2	.....	Do.
17	William Earle, Amonville, Union County	12	.....	Do.
17	Mrs. Burnett, Amonville, Union County	11	.....	Do.
17	Clark Brown, Amonville, Union County	4	.....	Do.
17	F. McFagur, Amonville, Union County	19	.....	Do.
17	Mortimore Ball, Amonville, Union County	1	.....	Do.
17	Mrs. Lee, Amonville, Union County	2	.....	Do.
17	Henry Lehman, Amonville, Union County	2	.....	Do.
18	Mathias Dempsey, Middleville, Union County	2	.....	Do.
18	William & John Duffy, Middleville, Union County	19	.....	Do.
18	Edward M. Burnett, Middleville, Union County	26	.....	Do.
18	Joseph B. Headley, Middleville, Union County	4	.....	Do.
18	Delos Boshor, Middleville, Union County	6	.....	Do,
18	George Kubach, sr., Middleville, Union County	20	.....	Do.
18	Jos. Hadenthaurn, Middleville, Union County	6	.....	Do.
18	George Bubach, jr., Middleville, Union County	12	.....	Do.
18	Benjamin Pierson, near Westfield, Union County	10	.....	Do.
18	Elston Dailey, near Westfield, Union County	5	.....	Fair.
19	Isaac F. Scudder, near Westfield, Union County	18	.....	Do.
19	R. P. Graves, near Westfield, Union County	1	.....	Stables, good; animals, bad.
19	William Stitts, near Westfield, Union County	24	.....	Good.
19	John Miller, near Westfield, Union County	2	.....	Do.
19	Augustus Barnard, near Westfield, Union County	7	.....	Fair.
19	James Pierson, near Westfield, Union County	23	.....	Good.
19	Everitt Pierson, near Westfield, Union County	25	.....	Do.
19	B. F. Hann, Oakland, Union County	5	.....	Do.
19	James Smeaton, Oakland, Union County	3	.....	Do.
19	George Smeaton, Oakland, Union County	2	.....	Do.
19	David Williams, Roselle, Union County	7	.....	Do.
20	William Schoonover, near Fink's Mills, Union County	4	.....	Fair.
20	Fred Farley, near Fink's Mills, Union County	1	.....	Good.
20	James Fink, near Fink's Mills, Union County	2	.....	Do.
20	Mrs. Mary Derry, near Westfield, Union County	5	.....	Stables, fair; animals, poor.
20	Charles Brown, Fink's Mills, Union County	10	.....	Do.
20	Daniel Fink, Fink's Mills, Union County	25	.....	Fair.
20	Mr. Cockins, near Westfield, Union County	4	.....	Good.
20	Kilburne Tompkins, near Westfield, Union County	47	.....	Excellent.
20	Jacob Hamilton, near Westfield, Union County	3	.....	Good.
20	Mary A. Ward, near Westfield, Union County	24	.....	Stables, fair; animals, good.
20	M. Corey, near Westfield, Union County	3	.....	Do.
20	S. A. Clark, near Westfield, Union County	4	.....	Stables, filthy; animals, very poor.
20	Nicholas Kaylor, near Westfield, Union County	2	.....	Good.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
Feb. 21	John B. Roll, Springfield, Union County	17	.....	Stables, excellent; animals, very good.
21	William Miller, Springfield, Union County	8	.....	Good.
21	William S. Henderson, Springfield, Union County	7	.....	Do.
21	J. Martin Roll, Springfield, Union County	15	.....	Excellent.
21	John S. Purcell, Springfield, Union County	4	.....	Good.
21	John Woodruff, Springfield, Union County	13	.....	Do.
21	John Leber, Springfield, Union County	2	.....	Do.
	Inspections by Rowland & Hawk, V. S.			
Feb. 23	Fred Seaman, Chatham, Morris County	10	.....	Good.
23	Calsey Roberts, Chatham, Morris County	12	.....	Do.
23	M. Genunk, Chatham, Morris County	4	.....	Do.
23	Charles Gumb, Chatham, Morris County	6	.....	Do.
23	Henry Dey, Chatham, Morris County	7	.....	Do.
23	Harvey Lumb, Chatham, Morris County	7	.....	Do.
23	S. H. Ward, Chatham, Morris County	15	.....	Do.
23	B. Bond, Chatham, Morris County	5	.....	Do,
23	John Doren, Chatham, Morris County	10	.....	Do.
23	R. H. Allen, Chatham, Morris County	20	.....	Do.
23	M. Wallace, Chatham, Morris County	27	.....	Do.
23	R. W. Lenim, Chatham, Morris County	15	.....	Do.
25	David Van Wort, Pine Brook, Morris County	5	.....	Do.
25	H. Van Ness, Pine Brook, Morris County	5	.....	Do.
25	Egbert Miller, Pine Brook, Morris County	9	.....	Do.
25	James A. Van Dime, Pine Brook, Morris County	19	.....	Do.
25	David S. Van Dime, Pine Brook, Morris County	10	.....	Do.
25	John Ricker, Pine Brook, Morris County	6	.....	Do.
25	Charley Berger, Pine Brook, Morris County	17	.....	Do.
25	William Coles, Pine Brook, Morris County	8	.....	Do.
26	Patrick Riley, Pine Brook, Morris County	2	.....	Do.
26	Daniel Gordon, Pine Brook, Morris County	3	.....	Do.
26	I. Little, Pine Brook, Morris County	18	.....	Do.
26	Stephen Van Dime, Pine Brook, Morris County	18	.....	Do.
26	John H. Henson, Clinton, Essex County	5	.....	Do.
26	Richard Husk, Clinton, Essex County	13	.....	Do.
26	John R. Cole, Clinton, Essex County	6	.....	Do.
27	John H. Pier, Little Falls, Essex County	10	.....	Do.
27	Peters Venders, Little Falls, Essex County	16	.....	Do.
27	William Bush, Little Falls, Essex County	11	.....	Do.
27	Vardenhoof, Little Falls, Essex County	5	.....	Do.
27	James Jacobus, Little Falls, Essex County	7	.....	Do.
27	John R. Jacobus, Little Falls, Essex County	3	.....	Do.
27	Judson Berness, Mount Clair, Essex County	5	.....	Do.
27	William Van Sisco, Mount Clair, Essex County	4	.....	Do.
28	William McDermitt, Newark, Essex County	2	.....	Do.
28	Sisters of Charity, Newark, Essex County	5	.....	Do.
28	Mrs. Spruce, Newark, Essex County	1	.....	Do.
28	John Bicks, Newark, Essex County	7	.....	Do.
28	M. Waltz, Newark, Essex County	7	.....	Do.
28	Mrs. Brosier, Newark, Essex County	8	.....	Do.
28	M. Bruno, Newark, Essex County	6	.....	Do.
28	Mrs. Suzine, Newark, Essex County	1	.....	Do.
28	Isaac Murry, Newark, Essex County	2	.....	Do.
28	H. Hornes, Newark, Essex County	1	.....	Do.
28	Barney Sterns, Newark, Essex County	25	.....	Do.
28	Jacob Levi, Newark, Essex County	6	.....	Do.
28	M. Farrington, Newark, Essex County	29	.....	Do.
28	H. R. Napp, Newark, Essex County	3	.....	Do.
	Inspections by Miller & Dyer, V. S.			
Feb. 23	William Trustrum, East Rahway, Union County	18	.....	Good.
23	Harry Simmons, East Rahway, Union County	77	.....	Do.
23	Matthew McCarthy, near Cartaret Star, Union County	6	.....	Fair.
23	Michael Brady, near Cartaret Star, Union County	12	.....	Do.
23	Richard Davis, near Cartaret Star, Union County	22	.....	Good.
23	George Zinc, Blazing Star, Union County	4	.....	Do.
23	Moses Hermon, Blazing Star Lane, Union County	4	.....	Do.
23	John C. Foulck, Blazing Star, Union County	3	.....	Do.
24	Mrs. J. C. March, country, Union County	12	.....	Stables, filthy animals, poor.
24	David Tappan, country, Union County	9	.....	Fair.
24	William McCoy, country, Union County	7	.....	Good.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
Feb. 24	William J. Shotwell, country, Union County	2	.....	Good.
24	Henry Turner, country, Union County	6	.....	Stables, good; animals, fair.
24	William Turner, country, Union County	8	.....	Good.
24	F. J. Sawyer, country, Union County	10	.....	Fair.
24	Albert D. Brown, country, Union County	8	.....	Good.
24	Miles Vernon, country, Union County	6	.....	Do.
24	J. C. Blair, country, Union County	47	.....	Do.
24	Warren Brown, Rahway Neck, Union County	3	.....	Do.
24	Mrs. Caroline Jacques, Rahway Neck, Union County	3	.....	Do.
25	Max Reifel, near Rahway, Union County	5	.....	Do.
25	Joseph Holland, near Rahway, Union County	9	.....	Do.
25	James B. Westeweth, near Rahway, Union County	8	.....	Do.
25	Daniel Haley, Rahway, Union County	5	.....	Do.
25	Adam Brenner, Rahway, Union County	5	.....	Stables, fair; animals, good.
25	John Wyman, Rahway, Union County	8	.....	Good.
25	Aug. Ritter, Rahway, Union County	8	.....	Do.
25	Mr. Amhurst, Rahway Union County	3	.....	Do.
25	William Meyers, near Vreeland's, Union County	5	.....	Stables, fair; animals, poor.
25	Henry Ditzell, Vreeland's Mills, Union County	7	.....	Stables, filthy; animals, poor.
26	Stephen Cox, Cranford, Union County	1	.....	Good.
26	Frank Lamberdine, Cranford, Union County	2	.....	Do.
26	Moses Crane, Cranford, Union County	4	.....	Do.
26	Fred. Ellis, Cranford, Union County	2	.....	Do.
26	Fred. Parks, Cranford, Union County	1	.....	Do.
26	Alfred Winans, Cranford, Union County	4	.....	Do.
26	Isaac Winans, Cranford, Union County	4	.....	Do.
26	Peter Crier, Cranford, Union County	1	.....	Do.
26	John Winans, Cranford, Union County	1	.....	Do.
26	John Philips, Cranford, Union County	7	.....	Do.
26	John Gerason, Cranford, Union County	2	.....	Stables, filthy; animals, good.
26	Rudolph Blanche, Roselle, Union County	3	.....	Good.
27	Robert Woodruff, Westfield, Union County	11	.....	Stables, fair; animals, good.
27	Albert Darake, Westfield, Union County	20	.....	Good.
27	Martin Clarke, Westfield, Union County	2	.....	Do.
27	Henry Curtis, Westfield, Union County	17	.....	Stables, filthy; animals, fair.
27	E. D. Chamberlain, Westfield, Union County	3	.....	Good.
27	William Theis, Westfield, Union County	4	.....	Do.
27	John Scudder, Westfield, Union County	13	.....	Stables, filthy; animals, poor.
27	Adam Miller, jr., Westfield, Union County	4	.....	Good.
27	Adam Brandner, Westfield, Union County	14	.....	Do.
27	Adam Miller, sr., Westfield, Union County	5	.....	Do.
28	Theodore Hetfield, Westfield, Union County	7	.....	Do.
28	Charles H. French, Westfield, Union County	3	.....	Do.
28	Jacob French, Westfield, Union County	18	.....	Do.
28	Smith Scudder, Westfield, Union County	19	.....	Do.
28	Smith Hetfield, Netherwood, Union County	11	.....	Do.
28	Cap. Tronsom, Netherwood, Union County	2	.....	Do.
28	William Steel, Netherwood, Union County	28	.....	Stables, good; animals, fair.
28	Edward Maher, Netherwood, Union County	2	.....	Good.
28	Ann Vernon, Netherwood, Union County	1	.....	Do.
28	John Engle, near Irvington, Union County	11	.....	Do.
28	James Evans, near Irvington, Union County	14	.....	Do.
28	Charles Ayers, near Irvington, Union County	24	.....	Do.
	Inspections by Rowland & Hawk, V. S.			
Mar. 2	John Traber, Brookdale, Essex County	5	.....	Good.
2	Anthony Bruney, Brookdale, Essex County	3	.....	Do.
2	H. Linderburg, Brookdale, Essex County	5	.....	Do.
2	Aford Cockefer, Brookdale, Essex County	3	.....	Do.
2	Mrs. Lockwood, Brookdale, Essex County	14	.....	Do.
2	M. Davidson, Brookdale, Essex County	10	.....	Do.
2	Moses Sigler, Brookdale, Essex County	14	.....	Do.
2	M. Garringer, Brookdale, Essex County	12	.....	Do.
2	Jerrie Vanbuie, Brookdale, Essex County	4	.....	Do.
2	John Warren, Brookdale, Essex County	2	.....	Do.
2	Jacob Shoemaker, Brookdale, Essex County	7	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle	No. with lung-plague.	Condition.
	Inspections by Rowland & Hawk, V. S.—Continued.			
1885.				
Mar. 2	A. H. Van Houston, Brookdale, Essex County	9	.....	Good.
3	Henry Hepburn, Paterson, Passaic County	25	.....	Stables, very fine; animals, very good.
3	P. Van Ryper, Paterson, Passaic County	4	.....	Good.
3	M. Kahman, Paterson, Passaic County	5	.....	Do.
3	H. Freezy, Paterson, Passaic County	2	.....	Do.
3	John Lots, Paterson, Passaic County	40	.....	Do.
3	C. S. Van Winkle, Paterson, Passaic County	13	.....	Do.
3	L. Stockard, Paterson, Passaic County	16	.....	Do.
3	John Alman, Paterson, Passaic County	4	.....	Do.
3	D. H. Shoemaker, Paterson, Passaic County	4	.....	Do.
4	H. Von Drekel, Richfield, Passaic County	11	.....	Do.
4	H. D. Peterson, Richfield, Passaic County	4	.....	Do.
4	John H. Swizewood, Richfield, Passaic County	6	.....	Do.
4	Miss Loltz, Richfield, Passaic County	50	.....	Do.
4	Nicholas Gaston, Richfield, Passaic County	2	.....	Do.
4	Conrad Block, Richfield, Passaic County	8	.....	Do.
4	E. D. Fermer, Paterson, Passaic County	3	.....	Do.
4	Andrew Duscmus, Paterson, Passaic County	15	.....	Do.
4	M. Cathaline, Richfield, Passaic County	6	.....	Do.
4	John I. Sipp, Paterson, Passaic County	3	.....	Do.
4	Frank Castell, Paterson, Passaic County	4	.....	Do.
4	W. I. Speer, Paterson, Passaic County	4	.....	Do.
4	Mrs. Dannehauer, Paterson, Passaic County	11	.....	Do.
5	James Spear, Peru, Passaic County	14	.....	Do.
5	Thomas Spear, Peru, Passaic County	5	.....	Do.
5	George Lockwood, Peru, Passaic County	25	.....	Do.
5	Peter Garrabaut, Peru, Passaic County	10	.....	Do.
5	John Spear, Peru, Passaic County	13	.....	Do.
5	L. B. Kent, Brookdale, Passaic County	6	.....	Do.
5	James Nichol, Brookdale, Passaic County	6	.....	Do.
5	John Stager, Brookdale, Passaic County	7	.....	Do.
5	Benjamin Marsh, Franklin, Passaic County	14	.....	Do.
5	Charles Moore, Franklin, Passaic County	11	.....	Do.
5	Arthur Francisco, Franklin, Passaic County	5	.....	Do.
5	John Blau, Franklin, Passaic County	10	.....	Do.
5	Mrs. M. Jackson, Franklin, Passaic County	10	.....	Do.
7	Mrs. Hart, Paterson, Passaic County	6	.....	Do.
7	John Doner, Paterson, Passaic County	14	.....	Do.
7	William Armetage, Paterson, Passaic County	9	.....	Do.
7	Thomas Spokes, Paterson, Passaic County	10	.....	Do.
7	Abraham Rhine, Paterson, Passaic County	5	.....	Do.
7	William F. Turner, Paterson, Passaic County	2	.....	Do.
7	W. Ackerman, Paterson, Passaic County	2	.....	Do.
7	Peter Van Houston, Paterson, Passaic County	4	.....	Do.
7	Jacob Rogers, Paterson, Passaic County	8	.....	Do.
7	George Gilmore, Paterson, Passaic County	18	.....	Do.
7	Jacob Hill, Paterson, Passaic County	8	.....	Do.
7	M. Gorman, Paterson, Passaic County	3	.....	Do.
7	Peter Zeeless, Paterson, Passaic County	8	.....	Do.
7	John Zabriskie, Patterson, Passaic County	12	.....	Do.
	Inspections by Miller & Dyer, V. S.			
Mar. 9	Israel Vail, Scotch Plains, Union County	6	.....	Good.
9	John Stille, Scotch Plains, Union County	8	.....	Do.
9	Abraham Compton, Scotch Plains, Union County	1	.....	Do.
9	Mr. Dore, Scotch Plains, Union County	4	.....	Do.
9	Henry Bruder, Scotch Plains, Union County	3	.....	Do.
9	George Hartshorne, Scotch Plains, Union County	11	.....	Do.
9	George Gess, Lambert's Corner, Union County	4	.....	Do.
9	Noah Terry, Lambert's Corner, Union County	3	.....	Do.
9	John Fagan, Lambert's Corner, Union County	40	.....	Excellent.
9	John Gannick, Lambert's Corner, Union County	10	.....	Good.
9	Estate Thomas J. Little, Lambert's Corner, Union County	2	.....	Do.
10	Henry Enders, Plainfield to Rahway, Union County	7	.....	Do.
10	W. F. Van Winkle, Plainfield to Rahway, Union County	2	.....	Do.
10	W. R. Carker, Plainfield to Rahway, Union County	3	.....	Do.
10	Theodore Folsom, Plainfield to Rahway, Union County	9	.....	Fair.
10	Jacob Blackman, Plainfield to Rahway, Union County	2	.....	Good.
10	Samuel Lippincott, Plainfield to Rahway, Union County	6	.....	Stables, poor; animals, fair.
10	John Pickel, Plainfield to Rahway, Union County	4	.....	Good.
10	William Terry, Plainfield to Rahway, Union County	15	.....	Do.
10	Isaac Lambert, Plainfield to Rahway, Union County	12	.....	Do.
10	Isaac Little, Plainfield to Rahway, Union County	10	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Millor and Dyer, V. S.—Continued.			
1885.				
Mar. 10	John Lambert, Plainfield to Rahway, Union County	14	.....	Stables, good; animals, fair.
10	Emily Counett, Plainfield to Rahway, Union County	1	.....	Good.
10	Lambert De Camp, Plainfield to Rahway, Union County	1	.....	Do.
10	William Van Ness, Plainfield to Rahway, Union County	12	.....	Do.
10	Edward Terry, Plainfield to Rahway, Union County	4	.....	Do.
10	Thomas Highland, Plainfield to Rahway, Union County	5	.....	Do.
10	H. E. Randolph, Plainfield to Rahway, Union County	3	.....	Do.
10	Andrew Love, Plainfield to Rahway, Union County	2	.....	Do.
11	H. H. Randolph, Plainfield to Rahway, Union County	6	.....	Do.
11	Christian Waldron, near Plainfield, Union County	9	.....	Do.
11	George W. Stover, near Plainfield, Union County	1	.....	Do.
11	Charles Lenoskei, near Plainfield, Union County	2	.....	Do.
11	John Edwards, near Plainfield, Union County	2	.....	Do.
11	Jeremiah Underhill, near Plainfield, Union County	25	.....	Do.
11	John Edward Randolph, near Plainfield, Union County	4	.....	Do.
11	Mr. Porter, near Plainfield, Union County	3	.....	Do.
11	Mahlon Vail, near Plainfield, Union County	1	.....	Do.
11	Robert Kyle, near Plainfield, Union County	2	.....	Do.
11	Samuel Johnson, near Plainfield, Middlesex County	10	.....	Do.
11	Samuel Randolph, near Plainfield, Middlesex County	4	.....	Do.
11	Eugene Van Cort, near Plainfield, Middlesex County	3	.....	Do.
11	D. L. Melick, near Plainfield, Middlesex County	10	.....	Do.
11	John J. Freeman, near Plainfield, Middlesex County	2	.....	Do.
12	Amro Koag, near Houtenville, Middlesex County	9	.....	Do.
12	John Joners, near Houtenville, Middlesex County	30	.....	Do.
12	Joseph Krueur, near Houtenville, Middlesex County	5	.....	Do.
12	Augustus Blackford, near Houtenville, Middlesex County	7	.....	Do.
12	William Kelly, near Houtenville, Middlesex County	5	.....	Do.
12	Mrs. Kelly, near Houtenville, Middlesex County	1	.....	Do.
12	Alexander Noe, near Houtenville, Middlesex County	5	.....	Do.
12	John J. Holly, Plainfield, Middlesex County	80	.....	Do.
13	R. Randolph, road to Rahway, Middlesex County	10	.....	Do.
13	D. M. Walters, road to Rahway, Middlesex County	6	.....	Do.
13	Lewis C. Randolph, road to Rahway, Middlesex County	10	.....	Do.
13	P. J. Rowley, road to Rahway, Middlesex County	14	.....	Do.
13	William Melick, road to Rahway, Middlesex County	5	.....	Do.
13	J. R. Potter, road to Rahway, Middlesex County	5	.....	Do.
13	W. H. Potter, road to Rahway, Middlesex County	13	.....	Do.
13	R. C. Potter, road to Rahway, Middlesex County	8	.....	Do.
13	A. Potter, road to Rahway, Middlesex County	11	.....	Do.
13	Mrs. Coleman, road to Rahway, Middlesex County	2	.....	Do.
13	J. M. Boylan, road to Rahway, Middlesex County	5	.....	Do.
13	B. M. Castaleur, road to Rahway, Middlesex County	7	.....	Fair.
13	James Parmentier, road to Rahway, Middlesex County	50	.....	Do.
13	Theodore Wood, road to Rahway, Middlesex County	12	.....	Good.
13	James E. Goodman, road to Rahway, Middlesex County	9	.....	Do.
14	E. C. Martin, near Dover, Middlesex County	2	.....	Do.
14	George B. Harrison, near Dover, Middlesex County	3	.....	Do.
14	Izra Force, near Dover, Middlesex County	4	.....	Fair.
14	William Marshall, near Dover, Middlesex County	5	.....	Good.
14	D. C. Huyck, near Dover Middlesex County	12	.....	Do.
14	George F. Meyers, near Dover, Middlesex County	5	.....	Do.
14	Ellis Ayers, near Dover, Middlesex County	3	.....	Do.
14	Vaughn Hewett, near Dover, Middlesex County	3	.....	Do.
14	S. A. Fours, near Dover, Middlesex County	3	.....	Do.
14	Samuel Woodruff, near Dover, Middlesex County	4	.....	Do.
14	John Webber, near Dover, Middlesex County	4	.....	Do.
	Inspections by Rowland & Hawk, V. S.			
Mar. 9	Harwitz & Lavinthal, Weehawken, Hudson County	46	.....	Good.
9	Michael Sullivan, Hoboken, Hudson County	10	.....	Not good.
9	Miss M. McGuire, Marion, Hudson County	15	.....	Stables, filthy; animals, good.
10	Daniel Haller, Greenville, Hudson County	25	.....	Stables, not good; animals, good.
10	John Mahoney, Greenville, Hudson County	10	.....	Good.
10	M. Curry, Greenville, Hudson County	10	.....	Do.
10	Dennis Hogan, Greenville, Hudson County	12	.....	Do.
10	M. Myers, Pamapo, Hudson County	8	.....	Do.
10	Henry Iden, Pamapo, Hudson County	18	.....	Do.
10	William Wright, Bayonne, Hudson County	4	.....	Do.
10	Captain Beele, Bayonne, Hudson County	5	.....	Do.
10	C. Folson, Bayonne, Hudson County	7	.....	Do.
10	F. W. Gobel, Bayonne, Hudson County	11	.....	Stables, not good.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Rowland & Hawk, V. S.—Continued.			
1885.				
Mar. 10	Miss Mackentire, Bayonne, Hudson County	11	.....	Good.
12	John Peters, near Paterson, Passaic County	18	.....	Do.
12	Jacob Busier, near Paterson, Passaic County	11	.....	Do.
12	James Demoire, near Paterson, Passaic County	5	.....	Do.
12	J. Gardner, near Paterson, Passaic County	6	.....	Do.
12	Mr. Peter Stir, Wortendyke, Bergen County	16	.....	Do.
12	Richard Boger, Wortendyke, Bergen County	6	.....	Do.
12	Daniel McGrogan, Wortendyke, Bergen County	8	.....	Do.
12	Mrs. Jane Graham, Wortendyke, Bergen County	17	.....	Do.
12	William Ellis, Wortendyke, Bergen County	5	.....	Do.
12	George Adams, Wortendyke, Bergen County	2	.....	Do.
13	Thomas Butterworth, North Haledon, Passaic County	12	.....	Do.
13	Edward Nolar, North Haledon, Passaic County	12	.....	Do.
13	J. J. Messorvie, North Haledon, Passaic County	15	.....	Do.
13	John Campbell, North Haledon, Passaic County	40	.....	Do.
13	John Lotz, North Haledon, Passaic County	65	.....	Do.
14	Jacob Shinbanna, West Rutherford, Passaic County	6	.....	Do.
14	Christian Shinbanna, West Rutherford, Passaic County	14	.....	Do.
14	Henry Hollender, West Rutherford, Passaic County	5	.....	Do.
14	Martin Bergen, West Rutherford, Passaic County	5	.....	Do.
14	Jacob Smith, West Rutherford, Passaic County	6	.....	Do.
14	Jacob Van Winkle, West Rutherford, Passaic County	13	.....	Do.
14	Michael Van Winkle, West Rutherford, Passaic County	17	.....	Do.
	Inspections by Miller & Iryer, V. S.			
Mar. 16	James Brown, Dunellen, Somerset County	3	.....	Good.
16	George Brown, Dunellen, Somerset County	2	.....	Do.
16	Isaac Randolph, near Plainfield, Somerset County	13	.....	Do.
16	A. P. Voorhees, near Plainfield, Somerset County	13	.....	Do.
16	Anthony Lazzy, near Dunellen, Somerset County	3	.....	Do.
16	J. B. Allen, Dunnellen, Somerset County	28	.....	Do.
16	William Smock, near Plainfield, Somerset County	2	.....	Do.
16	Michael McCarty, near Plainfield, Somerset County	1	.....	Do.
16	John McCarty, near Plainfield, Somerset County	1	.....	Do.
16	Mr. Compton, near Plainfield, Somerset County	1	.....	Do.
16	L. M. Rocap, near Plainfield, Somerset County	10		Stables, fair; animals, very poor.
16	Forman Joice, near Dunellen, Somerset County	1	.....	Good.
16	Alex. McCawley, near Plainfield, Somerset County	2	.....	Do.
16	Harper, Hollingsworth & Co., near Plainfield, Somerset Co	1	.....	Do.
17	James V. Dunham, near Dunellen, Somerset County	5	.....	Do.
17	Peter Conover, near Dunellen, Somerset County	3	.....	Do.
17	George Conover, near Dunellen, Somerset County	1	.....	Do.
17	Alexander Dunn, near Dunellen, Somerset County	15	.....	Do.
17	Lewis Randolph, near Bound Brook, Somerset County	17	.....	Stables, filthy; animals, very poor.
17	William H. Smock, near Bound Brook, Somerset County	5	.....	Good.
17	Cook & Van Pelt, near Bound Brook, Somerset County	24	.....	Do.
18	A. Wolf, near Plainfield, Somerset County	13	.....	Stables, good; animals, fair.
18	Jos. Maynard, near Plainfield, Somerset County	2	.....	Good.
18	S. Smith, near Plainfield, Somerset County	1	.....	Do.
18	R. Malley, near Plainfield, Somerset County	2	.....	Do.
18	C. Malley, near Plainfield, Somerset County	3	.....	Do.
18	Mrs. Foote, New Brooklyn, Middlesex County	1	.....	Do.
18	James Quinn, New Brooklyn, Middlesex County	2	.....	Do.
18	William Smith, New Brooklyn, Middlesex County	13	.....	Do.
18	Charles Closson, New Brooklyn, Middlesex County	4	.....	Do.
18	Mr. Mills, New Brooklyn, Middlesex County	8	.....	Do.
18	Samuel Croshaw, New Brooklyn, Middlesex County	12	.....	Do.
18	William Clark, New Brooklyn, Middlesex County	10	.....	Do.
18	Amos Tindall, New Brooklyn, Middlesex County	9	.....	Do.
18	L. D. Laing, New Brooklyn, Middlesex County	3	.....	Do.
19	W. J. Hoffman, New Brooklyn, Middlesex County	1	.....	Do.
19	William J. Elliott, New Brooklyn, Middlesex County	5	.....	Do.
19	William B. Steward, New Market, Middlesex County	10	.....	Do.
19	H. M. Mullison, New Market, Middlesex County	2	.....	Do.
19	Mrs. Pyatt, New Market, Middlesex County	2	.....	Do.
19	A. Closson, New Market, Middlesex County	2	.....	Do.
19	Mrs. Drake, New Market, Middlesex County	4	.....	Do.
19	John Dayton, New Market, Middlesex County	7	.....	Do.
19	B. F. Blackford, New Market, Middlesex County	3	.....	Do.
19	Mrs. M. A. Supardus, New Market Middlesex County	3	.....	Fair.
19	John Brady, New Market, Middlesex County	2	.....	Good.
19	F. Randolph, New Market, Middlesex County	3	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
Mar. 20	John Richards, New Market, Middlesex County	3	.....	Good.
20	Calvin Bilyew, New Market, Middlesex County	1	.....	Do.
20	Lloyd Nelson, New Market, Middlesex County	2	.....	Do.
20	Philip Jenner, New Market, Middlesex County	2	.....	Do.
20	Dr. A. Titsworth, New Market, Middlesex County	2	.....	Do.
20	A. S. Coryell, New Market, Middlesex County	2	.....	Do.
20	Mike Cruger, New Market, Middlesex County	2	.....	Do.
20	B. Hallock, New Market, Middlesex County	8	.....	Do.
20	Frank Van Ness, New Market, Middlesex County	3	.....	Do.
20	Peter Osbourn, New Market, Middlesex County	2	.....	Do.
20	Randolph Closson, New Market, Middlesex County	2	.....	Do.
20	Frank Venhise, New Market, Middlesex County	2	.....	Do.
20	John Ireland, New Market, Middlesex County	10	.....	Do.
20	John Blank, New Market, Middlesex County	8	.....	Do.
20	Billey Pizzey, New Market, Middlesex County	1	.....	Do.
20	Dr. Nelson, New Market, Middlesex, County	2	.....	Do.
20	Calvin Bilyew, New Market, Middlesex County	3	.....	Do.
20	Lewis Harris, New Market, Middlesex County	2	.....	Do.
21	Casper Welch, New Market, Middlesex County	1	.....	Do.
21	Jones Emmons, near Plainfield, Middlesex County	11	.....	Do.
21	E. Garvin, near Plainfield, Middlesex County	18	.....	Stables, filthy; animals, fair.
21	Mrs. Ransom, near Plainfield, Middlesex County	8	.....	Good.
21	Mrs. Peter Randolph, near Plainfield, Middlesex County	1	.....	Do.
21	J. P. Still, Plainfield, Middlesex County	14	.....	Stables, good; animals, fair.
21	Jacob R. Giles, New Market, Middlesex County	8	.....	Good.
21	William Deston, New Market, Middlesex County	2	.....	Do.
21	George Stiles, New Market, Middlesex County	1	.....	Do.
21	Smalley Coryell, near Bound Brook, Middlesex County	10	.....	Do.
21	C. C. Egel, Bound Brook, Middlesex County	8	.....	Do.
21	Isaac Giles, near Bound Brook, Middlesex County	5	.....	Do.
21	Daniel Boyle, near Bound Brook, Middlesex County	9	.....	Do.
21	Joseph Field, near Bound Brook, Middlesex County	27	.....	Do.
21	Mrs. Kelley, near Bound Brook, Middlesex County	1	.....	Do.
21	Nelson B. Giles, near Bound Brook, Middlesex County	7	.....	Do.
	Inspections by Rowland & Hawk, V. S.			
Mar. 16	J. Reynolds, Van Winkles, Passaic County	10	.....	Good.
16	R. Ringsley, Van Winkles, Passaic County	12	.....	Do
16	J. H. Satlerlhurist, Van Winkles, Passaic County	6	.....	Do.
16	J. Van Houten, Middle Park, Passaic County	12	.....	Do.
16	H. Romane, Midland Park, Passaic County	34	.....	Do.
16	Nicholas Crady, Midland Park, Passaic County	15	.....	Do.
16	Henry Neier, Van Winkles, Passaic County	10	.....	Do.
17	E. Barrell, Lafayette, Hudson County	16	.....	Do.
17	James Simon, Lafayette, Hudson County	8	.....	Do.
17	J. McDugal, Lafayette, Hudson County	15	.....	Do.
17	M. Hextrotter, Lafayette, Hudson County	3	.....	Stables, filthy; animals, fair.
17	J. Riley, Communipaw, Hudson County	10	.....	Good.
17	Mrs. McGuire, Jersey City Heights, Hudson County	9	.....	Stables, not good; animals, fair.
19	J. Mills, Pompton, Passaic County	13	.....	Good.
19	A. Wright, Pompton, Passaic County	25	.....	Do.
21	Jacob Referees, Singac, Passaic County	5	.....	Do.
21	A. Jackson, Singac, Passaic County	10	.....	Stables, filthy; animals, not good.
21	Peter Bailey, Singac, Passaic County	6	.....	Good.
21	J. R. Manderville, Singac, Passaic County	15	.....	Do.
21	Mrs. Vandine Allen, Singac, Passaic County	6	.....	Do.
21	J. S. P. Clark, Mountain View, Passaic County	7	.....	Do.
21	F. Sultz, Mountain View, Passaic County	3	.....	Do.
21	Mrs. Adams and Van Belt, Mountain View, Passaic County	10	.....	Do.
21	Charles Allen, Mountain View, Passaic County	19	.....	Do.
21	C. E. Richards, Mountain View, Passaic County	6	.....	Do.
23	Charles Van Ness, Pequannock, Passaic County	11	.....	Do.
23	Thomas Jones, Pequannock, Passaic County	14	.....	Do.
23	Theodore Debough, Pequannock, Passaic County	7	.....	Do.
23	L. Riason, near Wayne, Passaic County	7	.....	Do.
23	P. Riason, near Wayne, Passaic County	13	.....	Do.
23	Lucus L. Riason, near Wayne, Passaic County	6	.....	Do.
23	J. W. Monks, Pequannock, Passaic County	21	.....	Do.
23	L. M. Riason, near Wayne, Passaic County	12	.....	Do.
23	Nicholas J. Deremus, near Wayne, Passaic County	10	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Rowland & Hawk, V. S.—Continued.			
1885.				
Mar. 23	A. Deremus, near Wayne, Passaic County	10	.....	Good.
23	Peter Deremus, near Wayne, Passaic County	8	.....	Do.
23	H. Vreeland, Pequannock, Passaic County	10	.....	Do.
23	A. W. Riason, near Wayne, Passaic County	18	.....	Do.
23	J. Ibetts, Pequannock, Passaic County	4	1	Do.
24	Michael Cameron, Pompton Plains, Passaic County	3	.....	Do.
24	Simon Castor, Pompton Plains, Passaic County	4	.....	Do.
24	M. Colfax, Pompton Plains, Passaic County	10	.....	Do.
24	W. Miller, Pompton Plains, Passaic County	18	.....	Do.
24	James Graham, Pompton Plains, Passaic County	70	.....	Do.
24	S. W. Matthews, Pompton Plains, Passaic County	8	.....	Do.
24	Samuel Demott, Pompton Plains, Passaic County	9	.....	Do.
24	Edward Matthews, Pompton Plains, Passaic County	4	.....	Do.
24	Mrs. Beam, Pompton Plains, Passaic County	6	.....	Do.
24	S. Van Zone, Pompton Plains, Passaic County	5	.....	Do.
24	John J. Vansisco, Pompton Plains, Passaic County	4	.....	Do.
24	M. Jones, Pompton Plains, Passaic County	4	.....	Do.
24	Jacob Debough, Pompton Plains, Passaic County	6	.....	Do.
26	J. Demerest, Bloomingdale, Passaic County	4	.....	Do.
26	Abraham Brown, Bloomingdale, Passaic County	9	.....	Do.
26	Levi Lions, Bloomingdale, Passaic County	7	.....	Do.
26	Richards & Son, Bloomingdale, Passaic County	12	.....	Do.
26	M. J. Riason, Bloomingdale, Passaic County	12	.....	Do.
26	Mrs. Van Riper, Bloomingdale, Passaic County	13	.....	Do.
26	A. T. Briggs, Bloomingdale, Passaic County	12	.....	Do.
26	Peter D. Smith, near Butler, Passaic County	7	.....	Do.
26	Jacob Roth, near Butler, Passaic County	17	.....	Do.
26	B. R. Sisco, near Butler, Passaic County	17	.....	Do.
26	John P. Gerome, near Pompton Junction, Passaic County	3	.....	Do.
26	C. H. Nelson, Pompton Junction, Passaic County	26	.....	Do.
26	William Hill, Pompton Junction, Passaic County	28	.....	Do.
27	Peter Mycellas, Upper Preakness, Passaic County	6	.....	Do.
27	John Mycellas, Upper Preakness, Passaic County	9	.....	Do.
27	Charles Tittle, Upper Preakness, Passaic County	50	.....	Do.
27	M. J. Todd, Upper Preakness, Passaic County	3	.....	Do.
27	John Post, Upper Preakness, Passaic County	20	.....	Do.
27	James Ackman, Upper Preakness, Passaic County	4	.....	Do.
27	M. Duncan, Upper Preakness, Passaic County	25	.....	Do.
27	Robert Martin, Upper Preakness, Passaic County	24	3	Stables, good; animals, fair.
28	Robert Torbit, Upper Preakness, Passaic County	26	.....	Good.
28	William H. Berchina, Upper Preakness, Passaic County	25	.....	Do.
28	Fenix Ratsa, Preakness, Passaic County	10	.....	Do.
28	B. F. Romaine, Preakness, Passaic County	18	.....	Do.
28	C. Lotz, Preakness, Passaic County	17	.....	Do.
28	Jacob Lotz, Preakness Passaic County	4	.....	Do.
28	George Block, Preakness, Passaic County	12	.....	Do.
28	M. Swillhiver, Preakness, Passaic County	3	.....	Do.
28	Leonard Potter, Preakness, Passaic County	7	.....	Do.
28	J. Ringer, Preakness, Passaic County	3	.....	Do.
	Inspections by Miller & Dyer, V. S			
Mar. 23	Jos. Emmons, Plainfield, Middlesex County	5	.....	Good.
23	Manning Stell, Plainfield, Middlesex County	5	.....	Do.
23	Charles Ayers, Plainfield, Middlesex County	8	.....	Stables, good; animals, fair.
23	Ogden Monday, Plainfield, Middlesex County	8	.....	Good.
23	Mrs. Elmer Compton, Plainfield, Middlesex County	3	.....	Do.
23	J. W. Johnson, Plainfield, Middlesex County	42	.....	Do.
23	William Campbell, Plainfield, Middlesex County	6	.....	Do.
23	Lewis Strebble, Plainfield, Middlesex County	4	.....	Do.
23	Richard Hickman, Plainfield, Middlesex County	1	.....	Do.
23	Mrs. Caulby, Park avenue, Middlesex County	1	.....	Do.
23	Lewis Randal, Park avenue, Middlesex County	1	.....	Do.
23	Mr. Smith, Park avenue, Middlesex County	1	.....	Do.
23	Fred. Valentine, Park avenue, Middlesex County	1	.....	Do.
23	Mrs. Greason, Plainfield Middlesex County	1	.....	Do.
24	David L. Randolph, New Brooklyn, Middlesex County	6	.....	Do.
24	Daniel F. Randolph, New Brooklyn, Middlesex County	2	.....	Do.
24	Hiram Kelley, New Brooklyn, Middlesex County	2	.....	Do.
24	D. M. Sofield, New Brooklyn, Middlesex County	2	.....	Do.
24	Michael Higgins, New Brooklyn, Middlesex County	3	.....	Do.
24	Thomas Kelley, New Brooklyn, Middlesex County	1	.....	Do.
24	Betherne Dunham, New Brooklyn, Middlesex County	1	.....	Do.
24	Jeffrey Henger, New Brooklyn, Middlesex County		.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
Mar. 24	Patrick Garry, New Brooklyn, Middlesex County	1	.....	Good.
24	Thomas Savers, New Brooklyn, Middlesex County	1	.....	Do.
24	John Garey, New Brooklyn, Middlesex County	2	.....	Do.
24	Morris Higgins, New Brooklyn, Middlesex County	1	.....	Do.
24	Jonathan Dayton, New Brooklyn, Middlesex County	5	.....	Do.
24	Ephraim D. Boice, New Brooklyn, Middlesex County	7	.....	Stables, good; animals, fair.
24	Charles Saunders, New Brooklyn, Middlesex County	10	.....	Good.
24	Mr. Beantingham, New Brooklyn, Middlesex County	7	.....	Do.
24	E. Boise, New Brooklyn, Middlesex County	7	.....	Do.
24	Lewis Randolph, New Brooklyn, Middlesex County	5	.....	Do.
24	Samuel R. Dayton, New Brooklyn, Middlesex County	5	.....	Do.
25	Manning Clarkson, New Durham, Middlesex County	2	.....	Do.
25	Mrs. A. Munday, New Durham, Middlesex County	10	.....	Do.
25	Michael Cogwell, New Durham, Middlesex County	3	.....	Do.
25	Robert McAdams, New Durham, Middlesex County	8	.....	Do.
25	William McAdams, New Durham, Middlesex County	8	.....	Do.
25	Samuel C. Stelle, New Durham, Middlesex County	9	.....	Do.
25	H. Runyon, New Durham, Middlesex County	4	.....	Do.
25	Alexander Randolph, New Durham, Middlesex County	16	.....	Do.
25	Isaac S. Runyon, New Durham, Middlesex County	7	.....	Do.
26	L. Ayers, road from Oak Tree, Middlesex County	23	.....	Do.
26	Henry Frazee, road from Oak Tree, Middlesex County	2	.....	Do.
26	Isaac P. Morris, road from Oak Tree, Middlesex County	13	.....	Do.
26	Howard Ayers, road from Oak Tree, Middlesex County	5	.....	Do.
26	B. M. Keeley, road from Oak Tree, Middlesex County	4	.....	Do.
26	Charles Fowler, road from Oak Tree, Middlesex County	9	.....	Do.
26	Henry Shoemaker, road from Oak Tree, Middlesex County	1	.....	Do.
27	Nathan Robbins, road from Oak Tree, Middlesex County	21	.....	Do.
27	Lewis F. Rowland, Metuchen, Middlesex County	2	.....	Do.
27	John Clarkson, Metuchen, Middlesex County	5	.....	Do.
27	John Talmage, Metuchen, Middlesex County	1	.....	Do.
27	Mohlon Sopher, Metuchen, Middlesex County	1	.....	Do.
27	James Cook, Metuchen, Middlesex County	1	.....	Do.
27	James Gilhooley, Metuchen, Middlesex County	2	.....	Do.
27	John Hussey, Metuchen, Middlesex County	1	.....	Do.
27	Edward Martin, Metuchen, Middlesex County	1	.....	Do.
27	James Frazier, Metuchen, Middlesex County	3	.....	Do.
27	William Noble, Metuchen, Middlesex County	4	.....	Do.
27	Edward Hughes, Metuchen, Middlesex County	2	.....	Do.
27	A. C. Kelley, Metuchen, Middlesex County	1	.....	Do.
27	R. V. Bennett, Metuchen, Middlesex County	3	.....	Do.
27	Lewis Ayers, Metuchen, Middlesex County	9	.....	Do.
27	Wesley Bennett, Metuchen, Middlesex County	11	.....	Do.
28	Mr. O'Brien, near Metuchen, Middlesex County	2	.....	Do.
28	Mark Shantz, Metuchen, Middlesex County	3	.....	Do.
28	Henry La Forge, Dublin road, Middlesex County	6	.....	Stables, good; animals, fair.
28	Harrison Martin, road to Amboy, Middlesex County	7	.....	Stables, fair; animals, poor.
28	Henry Brout, Bonhamtown, Middlesex County	3	.....	Stables, good.
28	Peter Debboed, Bonhamtown, Middlesex County	2	.....	Do.
28	Luther Tappan, Bonhamtown, Middlesex County	5	.....	Do.
28	Henry Martin, Bonhamtown, Middlesex County	4	.....	Stables, fair; animals, poor.
28	George Munday, Bonhamtown, Middlesex County	2	.....	Good.
28	Mary Moffatt, road from Metuchen, Middlesex County	6	.....	Do.
28	Benjamin Ford, road from Metuchen, Middlesex County	2	.....	Do.
28	Isaac Cowins, road from Metuchen, Middlesex County	1	.....	Do.
28	Henry Wettenburg, road from Metuchen, Middlesex County	2	.....	Do.
28	William Bark, road from Metuchen, Middlesex County	1	.....	Do.
28	John Wolmonstof, road from Metuchen, Middlesex County	2	.....	Do.
28	William Hill, road from Metuchen, Middlesex County	3	.....	Do.
28	L. O'Brien, road from Metuchen, Middlesex County	4	.....	Do.
30	William Force, road from Metuchen, Middlesex County	4	.....	Do.
30	Fred. Manning, road from Metuchen, Middlesex County	4	.....	Do.
30	D. T. Jones, road from Metuchen, Middlesex County	4	.....	Do.
30	A. B. Tappan, road from Metuchen, Middlesex County	4	.....	Do.
30	William J. Dayton, road from Metuchen, Middlesex County	11	.....	Do.
30	Samuel S. Wyckoff, road from Metuchen, Middlesex County	17	.....	Do.
30	Peter V. Randolph, road from Metuchen, Middlesex County	4	.....	Do.
30	Mr. Abe Laing, road from Metuchen, Middlesex County	5	.....	Do.
30	Morris Garry, road from Metuchen, Middlesex County	3	.....	Do.
31	Sarah Trueyck, road from Stelton, Middlesex County	1	.....	Do.
31	Mrs. La Forge, road from Stelton, Middlesex County	2	.....	Do.
31	John Ross, road from Stelton, Middlesex County	5	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
Mar. 31	James D. Runyon, road from Stelton, Middlesex County	3	.....	Good.
31	Matthew Dunham, road from Stelton, Middlesex County	1	.....	Do.
31	Still Blackwood, road from Stelton, Middlesex County	10	.....	Do.
31	Isaac Dayton, road from Stelton, Middlesex County	3	.....	Do.
31	Manning Randolph, road from Stelton, Middlesex County	4	.....	Do.
31	Lewis Walker, road from Stelton, Middlesex County	7	.....	Do.
31	Lewis Dayton, road from Stelton, Middlesex County	7	.....	Do.
31	Runey D. Runyon, road from Stelton, Middlesex County	6	.....	Do.
Apr. 1	John Schwab, Union Village, Somerset County	10	.....	Do.
1	Andrew Herbert, Union Village, Somerset County	1	.....	Do.
1	John Hughes, Union Village, Somerset County	3	.....	Do.
1	William French, Union Village, Somerset County	3	.....	Do.
1	Richard B. Dikings, Washingtonville, Somerset County	10	.....	Do.
1	James Riley, Washingtonville, Somerset County	1	.....	Fair.
1	Mrs. J. B. Carger, Washingtonville, Somerset County	12	.....	Stables, good; animals, fair.
1	John Jamison, Washingtonville, Somerset County	10	.....	Stables, fair; animals, good.
1	John Burwick, Washingtonville, Somerset County	1	.....	Good.
1	William Allen, Washingtonville, Somerset County	1	.....	Do.
1	Mr. Bloom, Washingtonville, Somerset County	1	.....	Do.
1	Aaron Allen, Washingtonville, Somerset County	3	.....	Do.
1	Elias Allen, Washingtonville, Somerset County	3	.....	Do.
1	George W. Bullman, Washingtonville, Somerset County	2	.....	Do.
1	John B. Holmes, Washingtonville, Somerset County	5	.....	Fair.
1	Robert Simpson, Washingtonville, Somerset County	2	.....	Stables, bad; animals, poor.
1	Aime Mercier, Scotch Plains, Somerset County	5	.....	Stables, filthy; animals, fair.
1	Ed. Mercier, Scotch Plains, Somerset County	1	.....	Fair.
1	Aug. Hess, Scotch Plains, Somerset County	2	.....	Stables, fair; animals, poor.
1	Frank Eller, Scotch Plains, Somerset County	1	.....	Fair.
1	David A. French, Scotch Plains, Somerset County	18	.....	Good.
1	Jos. Frazer, Scotch Plains, Somerset County	3	.....	Do.
1	Alex. Hamilton, Scotch Plains, Somerset County	2	.....	Do.
1	Floyd Simmons, Scotch Plains, Somerset County	1	.....	Fair.
2	Thomas McGann, Union Village, Somerset County	26	.....	Good.
2	H. Bernett, Union Village, Somerset County	4	.....	Do.
2	A. H. Wilmot, Union Village, Somerset County	1	.....	Do.
2	T. C. Rogers, Union Village, Somerset County	19	.....	Stables, good; animals, fair.
2	Thomas Codington, Mount Bethel, Somerset County	21	.....	Good
2	George Terrell, Mount Bethel, Somerset County	3	.....	Do.
2	Thomas Simpson, Mount Bethel, Somerset County	14	.....	Very good.
2	J. La Maier, Mount Bethel, Somerset County	2	.....	Good.
2	John Cooper, Mount Bethel, Somerset County	12	.....	Stables, filthy; animals, poor.
2	John Wendal, Mount Bethel, Somerset County	10	.....	Good,
3	Mrs. Carroll, Mount Bethel, Somerset County	9	.....	Do.
3	Elias Carroll & Son, Millington, Somerset County	31	.....	Do.
3	David W. King, Millington, Somerset County	39	.....	Do.
3	Daniel Annin, Millington, Somerset County	8	.....	Do.
3	Daniel Irving, Millington, Somerset County	4	.....	Do.
4	George Winker, Washingtonville, Somerset County	1	.....	Do.
4	George Goodman, Washingtonville, Somerset County	4	.....	Do.
4	Thomas Taylor, Washingtonville, Somerset County	2	.....	Do.
4	Mrs. Dr. Erburg, Washingtonville, Somerset County	1	.....	Do.
4	William Madden, Washingtonville, Somerset County	5	.....	Stables filthy; animals, poor.
4	Henry Wish, Washingtonville, Somerset County	9	.....	Good.
4	Henry Meyer, Washingtonville, Somerset County	5	.....	Do,
4	A. V. Searing, Washingtonville, Somerset County	14	.....	Stables, fair; animals, good.
4	W. A. Baldwin, Washingtonville, Somerset County	11	.....	Good.
4	D. K. Vail, Washingtonville, Somerset County	6	.....	Do.
4	Michael Williams, Washingtonville, Somerset County	8	.....	Do.
4	John Laible, Washingtonville, Somerset County	5	.....	Stables, filthy; animals, very poor.
4	Peter Bowen, Washingtonville, Somerset County	4	.....	Good.
4	Howard Toms, Washingtonville, Somerset County	1	.....	Do.
4	Mrs. Taylor, Washingtonville, Somerset County	2	.....	Do.
4	Isaac Winans, Washingtonville, Somerset County	1	.....	Do.
4	S. Bilgey, Washingtonville, Somerset County	1	.....	Do.
4	Edw. Philips, Washingtonville, Somerset County	20	.....	Do.
4	E. S. Ackor, Washingtonville, Somerset County	9	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
Apr. 4	D. Haas, Washingtonville, Somerset County	1	.....	Good.
4	C. A. Cleaver, Washingtonville, Somerset County	10	.....	Do.
4	Mr. Anderson, Washingtonville, Somerset County	4	.....	Do.
4	Mrs. Bornman, Warrenville, Somerset County	3	.....	Do.
4	Adam Hurlien, Warrenville, Somerset County	1	.....	Do.
4	Mrs. Kesler, Warrenville, Somerset County	1	.....	Do.
2	Mr. Van Cleve, Mount Bethel, Somerset County	1	.....	Do.
2	J. J. Coon, Mount Bethel, Somerset County	2	.....	Do.
2	Aug. Moore, Mount Bethel, Somerset County	7	.....	Do.
2	William Muirr, Mount Bethel, Somerset County	13	.....	Do.
2	R. D. Baldwin, Washingtonville, Somerset County	1	.....	Do.
2	S. Bicknell, Washingtonville, Somerset County	18	.....	Do.
2	S. Beaching, Washingtonville, Somerset County	9	.....	Fair.
2	Elias Wilson, Washingtonville, Somerset County	2	.....	Do.
2	J. B. Zeller, Union Village, Somerset County	3	.....	Good.
3	William Ayres, Liberty Corner, Somerset County	1	.....	Do.
3	William Hays, Liberty Corner, Somerset County	8	.....	Do.
3	Lewis Acken, Liberty Corner, Somerset County	4	.....	Do.
3	Isaac Runyan, Baskin Ridge, Somerset County	25	.....	Do.
3	Thomas Terrell, Baskin Ridge, Somerset County	11	.....	Do.
3	Freeman Stells, Baskin Ridge, Somerset County	19	.....	Do.
3	Simon Monday, Baskin Ridge, Somerset County	8	.....	Do.
3	George W. Codington, Baskin Ridge, Somerset County	8	.....	Stables, fair; animals, poor.
3	O. R. Stella, Baskin Ridge, Somerset County	17	.....	Good.
3	B. Runyan, Millington, Somerset County	19	.....	Do.
3	Ed. Vaile, Millington, Somerset County	5	.....	Do.
3	Charles Amies, Millington, Somerset County	3	.....	Do.
3	Casper Fuchs, Millington, Somerset County	12	.....	Do.
3	G. W. H. Zeglis, Millington, Somerset County	37	.....	Do.
3	John Acken, Millington, Somerset County	8	.....	Do.
3	N. Bowers, Millington, Somerset County	7	.....	Do.
3	M. Marfing, Millington, Somerset County	3	.....	Do.
3	John V. Haas, Millington, Somerset County	6	.....	Do.
3	Alfred S. Compton, Millington, Somerset County	15	.....	Do.
3	William Fennimore, Millington, Somerset County	8	.....	Do.
4	Samuel Voorhees, Warrenville, Somerset County	21	.....	Do.
4	John Pennaman, Warrenville, Somerset County	3	.....	Do.
4	Jacob A. Schleif, Warrenville, Somerset County	1	.....	Do.
4	John Fennnie, Warrenville, Somerset County	4	.....	Do.
	Inspections by Rowland & Hawk, V. S.			
Mar. 30	George Brown, near Little Falls, Passaic County	13	.....	Good.
30	Mr. Hope, near Little Falls, Passaic County	5	.....	Do.
30	John Comter, near Little Falls, Passaic County	17	.....	Do.
30	Robert F. Brower, near Little Falls, Passaic County	16	.....	Do.
30	James Hammell, near Little Falls, Passaic County	16	.....	Do.
30	Michael Thomas, near Paterson, Passaic County	14	.....	Not good.
30	A. Limb, near Paterson, Passaic County	6	.....	Good.
30	M. Griffins, near Paterson, Passaic County	1	.....	Do.
30	Jacob Ruffing, near Paterson, Passaic County	19	.....	Do.
31	J. Zulauf, near Richfield, Passaic County	19	.....	Do.
31	Henry Chitson, near Richfield, Passaic County	16	.....	Do.
31	Edw. Crooker, near Richfield, Passaic County	10	.....	Do.
31	A. B. Vernon, near Richfield, Passaic County	9	.....	Do.
31	Aaron Sigler, Richfield, Passaic County	10	.....	Do.
31	Thomas Hepper, Richfield, Passaic County	14	.....	Do.
31	Mrs. J. Keestard, Richfield, Passaic County	7	.....	Do.
Apr. 1	John McCulla, Marion, Hudson County	4	.....	Do.
1	M. Smith, Marion, Hudson County	11	.....	Stables, fair; animals, good.
1	L. Owens, Five Corners, Hudson County	10	.....	Good.
1	George Vails, Five Corners, Hudson County	5	.....	Stables, fair; animals, good.
1	Jerrie Conklin, Five Corners, Hudson County	5	.....	Fair.
1	Patrick Coyle, Five Corners, Hudson County	15	1	Stables, not good; animals, fair.
1	F. E. Ulitz, Marion, Hudson County	10	.....	Good.
2	Patrick Folley, near Hoboken, Hudson County	4	.....	Fair.
3	Michael Torpey, near Hoboken, Hudson County	8	.....	Do.
3	Patrick Mooney, near Hoboken, Hudson County	4	.....	Good.
3	Hurwitz & Levintcal, near Weehawken, Hudson County	50	1	Stables, filthy; animals; fair.
3	Mrs. M. Cloud, West Hoboken, Hudson County	6	.....	Do.
3	B. McMahon, West Hoboken, Hudson County	7	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung plague.	Condition.
	Inspections by Rowland & Hawk, V. S.—Continued.			
1885.				
Apr. 3	P. Brody, West Hoboken, Hudson County	18	.....	Stables, filthy; animals, fair.
4	Negis Penning, near Secaucus, Hudson County	7	.....	Fair.
4	George Leary, near Secaucus, Hudson County	3	.....	Stables, filthy; animals, fair.
4	G. Brennert, near Secaucus, Hudson County	10	.....	Stables, fair; animals, good.
4	George Harms, Secaucus, Hudson County	8	.....	Good.
4	M. Litherman, jr., Secaucus, Hudson County	90	.....	Fair.
4	M. Feimberger, Secaucus, Hudson County	98	.....	Stables, filthy; animals, fair.
6	H. W. Elberson, near East Orange, Hudson County	50	.....	Stables, fair; animals, good.
6	A. P. & G. L. Mitchell, East Orange, Hudson County	95	.....	Fair.
6	G. DeWitt Garretson, Bound Brook, Somerset County	12	.....	Do.
6	"Ferry," over Debrosses street, Hudson County	8	.....	Good.
7	Booth & Darry, Orange, Essex County	48	.....	Do.
7	M. M. Dodd, Orange, Essex County	43	.....	Do.
7	G. H. Pferfer, Orange, Essex County	18	.....	Stables, fair; animals, good.
8	M. Bannister, Roseville, Essex County	18	.....	Do.
8	James Damb, Roseville, Essex County	20	.....	Fair.
8	John F. Maxfield, Bloomfield, Essex County	145	.....	Very fine.
9	Hurwitz & Leontial, Weehawken, Essex County	49	3	Stables, filthy; animals, not good.
9	Mrs. McGuire, near Jersey City, Essex County	20	.....	Do.
10	James Mulligan, Newark, Essex County	16	.....	Stables, fair; animals, good.
10	William Pilferton, near Haverly, Essex County	31	.....	Do.
10	Charles Castro, Haverly, Essex County	15	.....	Do.
10	Ballentine & Son, Haverly, Essex County	8	.....	Good.
10	Cornelius Chamberlain, near Newark, Essex County	25	.....	Fair.
10	F. Utricht, near Newark, Essex County	18	.....	Stables, fair; animals, good.
10	William Hark, Newark, Essex County	7	.....	Do.
	Inspections by Miller & Dyer, V. S.			
Apr. 6	S. B. Hinsdale, Woodbridge to Rahway, Middlesex County	3	.....	Good.
6	James P. Edgar, Woodbridge to Rahway, Middlesex County	4	.....	Do.
6	Jos. Lockwood, Woodbridge to Rahway, Middlesex County	7	.....	Do.
6	John Lockwood, Woodbridge to Rahway, Middlesex County	2	.....	Do.
6	Mrs. Coope, Woodbridge to Rahway, Middlesex County	2	.....	Do.
6	J. B. Edgar, Woodbridge to Rahway, Middlesex County	18	.....	Stables, good; animals, fair.
6	Aug. Snyder, Woodbridge to Rahway, Middlesex County	18	.....	Good.
6	David A. Marsh, Woodbridge to Rahway, Middlesex County	10	.....	Do.
6	Mr. Jardotts, Woodbridge to Rahway, Middlesex County	4	.....	Do.
6	Gustave Greir, Woodbridge to Rahway, Middlesex County	20	.....	Do.
6	Daniel Houlehan, Woodbridge to Rahway, Middlesex County	1	.....	Do.
7	R. J. Wiley, Woodbridge, Middlesex County	1	.....	Do.
7	Mrs. Roderick, Woodbridge, Middlesex County	1	.....	Do.
7	M. D. Valentine, Woodbridge, Middlesex County	2	.....	Do.
7	Amos Wells, Woodbridge, Middlesex County	6	.....	Do.
7	R. N. Vallentine, Woodbridge, Middlesex County	2	.....	Do.
7	William H. Cutter, Woodbridge, Middlesex County	2	.....	Do.
7	John Thompson, Woodbridge, Middlesex County	2	.....	Do.
7	Samuel Daily, Woodbridge, Middlesex County	4	.....	Do.
7	Mr. Demerest, Woodbridge, Middlesex County	2	.....	Do.
7	James Vallentine, Woodbridge, Middlesex County	2	.....	Do.
7	Mrs. Campbell, Woodbridge, Middlesex County	6	.....	Stables, good; animals, fair.
7	Patrick Kelley, Woodbridge, Middlesex County	12	.....	Good.
7	——— ———, Woodbridge, Middlesex County	4	.....	Do.
8	Mr. Sanderson, Woodbridge, Middlesex County	5	.....	Do.
8	Jonathan Shamp, Woodbridge, Middlesex County	6	.....	Do.
8	Harvey Sharp, Woodbridge, Middlesex County	3	.....	Do.
8	John Monday, Woodbridge, Middlesex County	3	.....	Do.
8	George Vaness, Woodbridge, Middlesex County	8	.....	Do.
8	L. D. Kelley, Woodbridge, Middlesex County	11	.....	Do.
8	Leonard Campbell, Woodbridge, Middlesex County	18	.....	Stables, fair; animals, poor.
8	William Edgar, Woodbridge, Middlesex County	5	.....	Good.
8	Mr. Lawson, Woodbridge, Middlesex County	1	.....	Do.
9	Henry Scanck, Rahway, Middlesex County	4	.....	Do.
9	Mrs. John Cole, Rahway, Middlesex County	3	.....	Do.
9	C. M. Hawkins, Rahway, Middlesex County	4	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
Apr. 9	Henry Ridder, Rahway, Middlesex County	8	.....	Good.
9	Mr. Moore, Rahway, Middlesex County	3	.....	Do.
9	John Brewer, Rahway, Middlesex County	3	.....	Do.
9	John Roger, Rahway, Middlesex County	1	.....	Do.
9	John Yose, Rahway, Middlesex County	7	.....	Do.
9	John Turner, Rahway, Middlesex County	2	.....	Do.
9	Charles Hone Rahway, Middlesex County	1	.....	Do.
9	Ed. Knapp, Rahway, Middlesex County	1	.....	Do.
10	John R. Smith, Bound Brook, Middlesex County	1	.....	Do.
10	William Taylor, Bound Brook, Middlesex County	1	.....	Do.
10	John Fritz, Bound Brook, Middlesex County	1	.....	Do.
10	John Morecraft, Bound Brook, Middlesex County	1	.....	Do.
10	William T. Morecraft, Bound Brook, Middlesex County	1	.....	Do.
10	John Donahne, jr., Bound Brook, Middlesex County	3	.....	Do.
10	John Riker, Bound Brook, Middlesex County	1	.....	Do.
10	John Grouse, Bound Brook, Middlesex County	1	.....	Do.
10	John Burke, Bound Brook, Middlesex County	1	.....	Do.
10	Lawrence Dooley, Bound Brook, Middlesex County	3	.....	Do.
10	William Flynn, jr., Bound Brook, Middlesex County	1	.....	Do.
10	William Post, Bound Brook, Middlesex County	3	.....	Do.
10	John Jones, near Bound Brook, Middlesex County	1	.....	Do.
10	Jacob Field, near Bound Brook, Middlesex County	2	.....	Do.
10	Charles R. Brokaw, Bound Brook, Middlesex County	2	.....	Do.
10	William D. Voorhees, Bound Brook, Middlesex County	5	.....	Do.
10	Romaine Fisher, Bound Brook, Middlesex County	1	.....	Do.
10	Mrs. Ayers, Bound Brook, Middlesex County	2	.....	Do.
10	Stephen Jones, Bound Brook, Middlesex County	1	.....	Do.
10	Jesse Rock, Bound Brook, Middlesex County	1	.....	Do.
10	James Rock, Bound Brook, Middlesex County	1	.....	Do.
11	Bernard Farmer, near Bound Brook, Middlesex County	22	1c.	Dirty.
11	C. W. La Tonerelte, Bound Brook, Middlesex County	6	.....	Good.
11	Staats Ayers, South Bound Brook, Middlesex County	7	.....	Do.
11	Mr. Spencer, South Bound Brook, Middlesex County	2	.....	Do.
11	John Staats, South Bound Brook, Middlesex County	2	.....	Do.
11	R. F. Fields, South Bound Brook, Middlesex County	2	.....	Do.
11	William Flynn, South Bound Brook, Middlesex County	2	.....	Do.
11	Calvin Hoagland, South Bound Brook, Middlesex County	1	.....	Do.
11	John Donahoe, South Bound Brook, Middlesex County	2	.....	Do.
11	Jerry Reedy, South Bound Brook, Middlesex County	1	.....	Do.
11	Mrs. Moore, South Bound Brook, Middlesex County	2	.....	Stables, filthy; animals, poor.
11	Mrs. Curry, South Bound Brook, Middlesex County	1	.....	Good.
11	Thomas Canefield, South Bound Brook, Middlesex County	3	.....	Stables, filthy; animals, poor.
	Inspections by Rowland & Hawk, V. S.			
Apr. 13	Mrs. Pierson, Orange, Essex County	25	.....	Good.
13	Mich Nall, Bloomfield, Essex County	35	.....	Fair.
13	Theodore Pierson, South Orange, Essex County	24	.....	Good.
14	F. H. Baldwin, South Orange, Essex County	24	.....	Fair.
14	James Peck, South Orange, Essex County	23	.....	Good.
14	W. G. Armbruster, South Orange, Essex County	15	.....	Do.
14	Fred. Hernlin, near Orange, Essex County	12	.....	Not good.
15	Samuel Johnson, Lyon's Farm, Union County	16	.....	Good.
15	John Duremus, Lyon's Farm, Union County	13	.....	Do.
15	John E. Rall, Lyon's Farm, Union County	20	.....	Do.
15	J. C. Bond, Lyon's Farm, Union County	14	1	Do.
15	M. Jager, Lyon's Farm, Union County	8	.....	Do.
15	John Winans, near Lyon's Farm, Union County	4	.....	Stables, fair; animals, good.
16	William Marcell, near Irvington, Essex County	30	.....	Good.
16	F. Underhill, near Irvington, Essex County	18	.....	Do.
16	Day Bros., near Irvington, Essex County	28	.....	Do.
16	William Parker, near Lions Farm Essex County	14	.....	Stables, fair; animals, good.
16	Henry Hamfield, Lions Farm, Essex County	18	.....	Fair.
16	James Van Hess, Lions Farm, Essex County	12	.....	Stables, fair; animals, good.
16	J. Hadden, near Newark, Essex County	20	.....	Stables, good; animals, fair.
16	J. Hess, near Newark, Essex County	14	.....	Stables, not good; animals, fair.
16	J. Moesle, near Newark, Essex County	16	.....	Fair.
17	Penn Ferries, Hoboken Ferry, Hudson County	6	.....	Do.
18	——— ———, Secaucus, Hudson County	1	1	Not good.
18	C. Asfelix, West New York, Hudson County	14	.....	Fair.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Rowland & Hawk, V. S.—Continued.			
1885.				
Apr. 18	Hoboken Ferries, Hoboken, Hudson County	2	.....	Good.
18	Herweitz & Lavintial, near Weehawken, Hudson County	49	3	Fair.
18	L. Stortenbocker, near Hoboken, Hudson County	7	2	Stables, filthy; animals, not good.
18	John Engle, near Hoboken, Hudson County	15	.....	Fair.
	Inspections by Miller & Dyer, V. S.			
Apr. 13	Mr. Mimmker, Pensauken, Camden County	1	.....	Good.
13	John Wolfe, Pensauken, Camden County	1	.....	Do.
13	Albert Wuester, Pensauken, Camden County	2	.....	Do.
13	J. A. Beckenback, Camden, Camden County	10	.....	Stables, fair; animals, poor.
13	D. Hilton, Camden, Camden County	2	.....	Stables, good; animals, poor.
13	Isaac V. Starn, Camden, Camden County	14	.....	Do.
13	Abram Bennett, Camden, Camden County	4	.....	Do.
13	Joseph Evaril, Camden, Camden County	7	.....	Do.
13	Hugh Hatch, Camden, Camden County	12	.....	Do.
13	Israel Adams, Camden, Camden County	3	.....	Do.
13	Robert Smith, Camden, Camden County	6	.....	Do.
13	Isaac Hinchman, Camden, Camden County	31	.....	Do.
13	Thomas Sinex, Camden, Camden County	2	.....	Do.
13	William Powell, Camden, Camden County	3	.....	Do.
13	Thomas Bideman, Camden, Camden County	1	.....	Do.
13	William Shrader, Camden, Camden County	1	.....	Do.
13	Mrs. C. Bideman, Camden, Camden County	1	.....	Do.
13	Benjamin Engard, Camden, Camden County	4	.....	Do.
13	B. C. Cholister, Camden, Camden County	2	.....	Stables, good; animals, fair.
13	B. R. Powell, Camden, Camden County	7	1	Fair.
13	George W. Clarke, Camden, Camden County	1	.....	Good.
13	William Cox, Camden, Camden County	13	.....	Do.
14	William Amon, Camden, Camden County	2	.....	Do.
14	G. H. Amon, Camden, Camden County	1	.....	Do.
14	Charles Price, Camden, Camden County	2	.....	Do.
14	Benjamin Ivins, Camden, Camden County	3	.....	Do.
14	William H. Pitman, Camden, Camden County	2	.....	Do.
14	Hon. Thomas H. Dudley, Camden, Camden County	7	.....	Do.
14	Charles Ruderon, Camden, Camden County	2	.....	Do.
14	Joseph Fisher, Camden, Camden County	5	.....	Do.
14	Merrit Hinchman, Camden, Camden County	2	.....	Do.
14	Joseph Cramer, Camden, Camden County	5	.....	Do.
14	Robert Smith, East Camden, Camden County	7	.....	Do.
14	Mr. Mortimer, Camden, Camden County	2	.....	Do.
14	Lemuel Horner, Pavonia, Camden County	8	.....	Do.
14	Fred. Grouswick, Pavonia, Camden County	1	.....	Do.
14	W. Tabator, Pavonia, Camden County	1	.....	Do.
14	Mr. Feenfer, Pavonia, Camden County	13	.....	Do.
14	Frank Slitz, Pavonia, Camden County	2	.....	Do.
14	B. Bideman, jr., Camden, Camden County	2	.....	Do.
15	Joseph Richmond, Palmyra, Camden County	2	.....	Do.
15	William Winnish, Palmyra, Camden County	1	.....	Do.
15	Mr. Horner, Camden, Camden County	3	.....	Do.
15	J. Snyder, Camden, Camden County	1	.....	Do.
15	Ben. Fish, Camden, Camden County	2	.....	Do.
15	Joel Clemmings, Camden, Camden County	3	.....	Do.
15	Ase P. Horner, Camden, Camden County	3	.....	Do.
15	Jos. Pedigree, Camden, Camden County	1	.....	Do.
15	Martin Fron, Camden, Camden County	2	.....	Do.
15	Frank Horner, Camden, Camden County	2	.....	Do.
15	John Mennol, Camden, Camden County	3	.....	Do.
15	Mr. Hammond, Camden, Camden County	1	.....	Do.
15	Warren Wescott, Camden, Camden County	1	.....	Do.
15	John Hunter, Camden, Camden County	1	.....	Do.
15	Charles Chane, Camden, Camden County	1	.....	Do.
15	William Strang, Camden, Camden County	1	.....	Do.
15	George Holvie, Camden, Camden County	3	.....	Do.
16	Amos Kaighn, Moorstown, Camden County	20	.....	Do.
16	David Burroughs, Moorstown, Camden County	14	.....	Do.
16	Samuel Hulings, Moorstown, Camden County	12	.....	Do.
16	Thomas Matchett, Moorstown, Camden County	13	.....	Stables, fair; animals, poor.
16	W. D. Cole, Moorstown, Camden County	16	.....	Good.
16	Charles Cole, Moorstown, Camden County	8	.....	Do.
16	Patrick O'Donnell, Moorstown, Camden County	1	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
Apr. 16	Sheppard Lowe, Moorstown, Camden County	1	.....	Good.
16	J. H. and J. W. Cole, Moorstown, Camden County	43	.....	Do.
16	D. G. Eusnec, Camden, Camden County	1	.....	Do.
16	Joseph Errickson, Camden, Camden County	6	.....	Do.
17	Abe Workman, Whiskey road, Camden County	2	.....	Do.
17	Enoch Robins, Merchantville, Camden County	8	.....	Do.
17	S. T. Cole, Whiskey road, Camden County	10	.....	Do.
17	George Moore, Whiskey road, Camden County.	4	.....	Do.
17	Harrison Robins, Merchantville, Camden County	2	.....	Do.
17	J. H. Amon, Camden, Camden County	2	.....	Do.
17	Washington Bucknell, Camden, Camden County	1	.....	Do.
17	Daniel Rich, Camden, Camden County	1	.....	Do.
17	Mr. Buran, Camden, Camden County	1	.....	Do.
17	Peter Ross, Camden, Camden County	1	.....	Do.
17	William Horn, Camden, Camden County	1	.....	Do.
17	S. L. Burroughs, Merchantville, Camden County	17	.....	Do.
17	Edw. Burroughs, Merchantville, Camden County	3	.....	Do.
17	Richard Leconey, Merchantville, Camden County	8	.....	Do.
18	John Cox, Pennsville, Camden County	2	.....	Do.
18	Alex. Dover, Pennsville, Camden County	2	.....	Do.
18	Alfred Dover, Pennsville, Camden County	2	.....	Do.
18	Charles Starns, Pennsville, Camden County	4	.....	Do.
18	Oscar Felton, Pennsville, Camden County	2	.....	Do.
18	David Ostler, Pennsville, Camden County	4	.....	Do.
18	William Pigeon, Pennsville, Camden County	1	.....	Do.
18	Isaac Stratton, Pennsville, Camden County	1	.....	Do.
18	Hen. Sanline, Pennsville, Camden County	1	.....	Do.
18	Theo. F. Stow, Pennsville, Camden County	9	.....	Do.
18	C. Fitzgerald, Pennsville, Camden County	24	.....	Do.
18	Joseph Hinchman, Pennsville, Camden County	20	.....	Do.
18	Edw. Ostler, Pennsville, Camden County	4	.....	Do.
20	William B. Fisher, Camden, Camden County	4	.....	Do.
20	Millard Hinchman, Camden, Camden County	1	.....	Do.
20	John Thomas, Camden, Camden County	2	.....	Do.
20	J. F. Cox, Camden, Camden County	4	.....	Do.
20	Isaiah Stone, Camden, Camden County	1	.....	Do.
20	William M. Horner, Camden, Camden County	1	.....	Do.
20	Elmer Fort, Camden, Camden County	3	.....	Do.
20	Silas Betz, Camden, Camden County	39	.....	Very good.
20	Isaac Hinchman, Camden, Camden County	12	.....	Good.
20	R. S. Shivers, Camden, Camden County	28	.....	Do.
20	C. T. Shreve, Camden, Camden County	7	.....	Do.
20	John Burrough, Camden, Camden County	1	.....	Do.
20	J. A. Starn, Camden, Camden County	1	.....	Do.
20	William C. Wood, Camden, Camden County	12	.....	Do.
20	Isaac W. Nicholson, Camden, Camden County	91	.....	Do.
20	Samuel Southwick, Camden, Camden County	1	.....	Do.
20	Martin Nolan, Camden, Camden County	2	.....	Do.
21	Asa Garwood, road to Haddonfield, Camden County	17	.....	Fair.
21	G. H. Hopkins, road to Haddonfield, Camden County	8	.....	Good.
21	Samuel Wood, road to Haddonfield, Camden County	17	.....	Do.
21	W. H. Collings, Colling's road, Camden County	1	.....	Do.
21	E. C. Knight, Colling's road, Camden County	15	.....	Do.
21	John D. Glover, Colling's road, Camden County	15	.....	Very good.
21	Benjamin Lippincott, Haddonfield, Camden County	19	.....	Good.
21	William Sutram, Haddonfield, Camden County	10	.....	Do.
21	John T. Grover, Haddonfield, Camden County	21	.....	Do.
21	E. C. Knight, Colling's road, Camden County	23	.....	Do.
21	Samuel N. Rhoades, Colling's road, Camden County	43	.....	Do.
22	Evans Pike, Camden, Camden County	2	.....	Do.
22	Frank Peditt, Camden, Camden County	2	.....	Do.
22	Edw. B. Stone, Camden, Camden County	1	.....	Do.
22	Mrs. Dallas, Camden, Camden County	3	.....	Do.
22	James Jaggard, Camden, Camden County	4	.....	Do.
22	William F. Tatem, Camden, Camden County	2	.....	Do.
22	Mr. Simons, Camden, Camden County	1	.....	Do.
22	James Pigeon, Camden, Camden County	1	.....	Do.
22	David M. Morgan, Camden, Camden County	3	.....	Do.
22	H. C. Cuthbert, Camden, Camden County	17	.....	Stable, good; animals, fair.
22	Amos Willis, Camden, Camden County	3	.....	Good.
22	Henry Lovell, Camden, Camden County	1	.....	Do.
22	Thomas Alberson, Camden, Camden County	1	.....	Do.
22	Charles Latchem, Camden, Camden County	8	.....	Fair.
21	James Dolbs, Camden, Camden County	2	.....	Good.
22	Thomas Jack, Camden, Camden County	1	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
Apr. 22	Briggs Kay, Camden, Camden County	2	.....	Good.
22	Samuel Reeve, Camden, Camden County	2	.....	Do.
22	Thomas Wilkenson, Camden, Camden County	1	.....	Do.
22	Samuel Locke, Camden, Camden County	1	.....	Do.
22	John Stoy, Camden, Camden County	6	.....	Fair.
22	Jacob Fowler, Camden, Camden County	4	.....	Good.
22	John Redman, Camden, Camden County	1	.....	Do.
22	Miss Sarah Nicholson, Haddonfield, Camden County	3	.....	Do.
23	G. G. Stratton, Camden, Camden County	15	.....	Do.
23	Samuel French, Camden, Camden County	6	.....	Do.
23	Jothna Haines, Camden, Camden County	4	.....	Do.
23	W. H. Nicholson, Camden, Camden County	15	.....	Do.
23	J. A. J. Sheets, Camden, Camden County	9	.....	Do.
23	Robert Fussell, Camden, Camden County	1	.....	Do.
23	Evans & Bettle, Camden, Camden County	73	.....	Do.
23	.....do	30	.....	Do.
23	Joseph C. Hollingshead, Camden, Camden County	26	.....	Do.
23	George Wiley, Newton road, Camden County	11	.....	Do.
24	Simeon W. Mitchell, road Camden to Mount Ephraim, Camden County.	1	.....	Do.
24	Charles K. Hinchman, road Camden to Mount Ephraim, Camden County.	15	.....	Do.
24	Joseph Avis, road Camden to Mt. Ephraim, Camden County.	28	.....	Do.
24	Arthur M. Sitley, road Camden to Mount Ephraim, Camden County.	24	.....	Do.
24	Joseph Cooper, road Camden to Mt. Ephraim, Camden County	1	.....	Do.
24	Joseph Kaighn, jr., road Camden to Mount Ephraim, Camden County.	13	.....	Do.
24	Joseph Kaighn, road Camden to Mount Ephraim, Camden County.	1	.....	Do.
24	James Eldridge, road Camden to Mount Ephraim, Camden County.	9	.....	Do.
24	George M. Ward, road Camden to Mount Ephraim, Camden County.	9	.....	Do.
24	Samuel B. Dobbs, road Camden to Mount Ephraim, Camden County.	11	.....	Do.
24	Joseph Eldridge, road Camden to Mount Ephraim, Camden County.	2	.....	Do.
24	Charles Wiley, road Camden to Mt. Ephraim, Camden County	9	.....	Do.
24	Daniel Tice, Camden	4	.....	Do.
24	E. W. Baltem, Camden	17	.....	Do.
24	Richard Pierson, Camden	4	.....	Do.
25	S. G. Stone, Mount Ephraim	62	.....	Do.
25	Jacob C. Dobbman, Mount Ephraim	16	.....	Do.
25	David Dore, Mount Ephraim	4	.....	Do.
25	William H. Rudderon, Mount Ephraim	....	.....	Fair.
25	Walter Grellam, Mount Ephraim	10	.....	Good.
25	Goldy & Dickensheet, Mount Ephraim	4	.....	Do.
25	John Morgan, Mount Ephraim	2	.....	Do.
20	S. Kolowsky, Secaucus Hudson, County	14	.....	Fair.
	Inspections by Rowland & Hawk, V. S.			
Apr. 20	Henry Stockfish, West Hoboken, Hudson County	25	.....	Good.
20	David Van Vorse, West Hoboken, Hudson County	20	.....	Do.
21	H. Fredwicks, near Orange, Essex County	16	.....	Fair.
21	Henry Fricker, near Orange, Essex County	25	.....	Not good.
21	B. S. Hayward, near South Orange, Essex County	10	.....	Fair.
21	Catholic Institute, near South Orange, Essex County	15	.....	Good.
21	John W. Woodruff, near South Orange, Essex County	20	.....	Do.
21	Jacob Klebb, near Newark, Essex County	10	.....	Fair.
21	J. A. Oakley, near Irvington, Essex County	20	.....	Good.
23	Charles Hadden, near Irvington, Essex County	16	.....	Do.
23	Nicholas Olman, near Irvington, Essex County	25	.....	Fair.
23	William Cocklin, near Irvington, Essex County	22	.....	Do.
23	John Crazer, near Newark, Essex County	19	.....	Stables, not good; animals, fair.
24	John Lynch, near Marion, Essex County	20	2	Stables, filthy; animals, not good.
24	William Blacker, near Greenville, Essex County	7	.....	Fair.
24	Thomas Carry, near Greenville, Essex County	6	.....	Stables, fair; animals, good.
24	George Ritcht, near Greenville, Essex County	5	.....	Fair.
24	John G. Rostible, near Greenville, Essex County	4	.....	Good.
24	Martin Coffern, near Greenville, Essex County	5	.....	Stables, fair; animals, good.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Rowland & Hawk, V. S.—Continued.			
1885.				
Apr. 24	Jacob Kepler, Greenville, Essex County	9	.....	Stables, fair; animals, good.
24	R. Haber, Greenville, Essex County	8	.....	Good.
24	Adam Downsteder, Greenville, Essex County	3	.....	Stables, fair; animals, good.
24	John Haman, Greenville, Essex County	7	.....	Do.
24	Frank Woola, Greenville, Essex County	15	2	Do.
25	P. Mulcaley, Ramapo, Essex County	23	.....	Good.
25	Patrick McCabe, Ramapo, Essex County	6	.....	Fair.
25	Mrs. J. Rodey, Ramapo, Essex County	8	.....	Good.
25	Norman Perry, New Durham, Essex County	6	.....	Do.
25	J. Reiner, New Durham, Essex County	13	2	Fair.
25	M. Denison, New Durham, Essex County	8	.....	Good.
25	T. De Cline, New Durham, Essex County	9	.....	Do.
25	S. H. Greenleaf, near Durham, Hudson County	6	.....	Do.
25	John Williams, Fair View, Hudson County	....	.....	Do.
25	W. J. Damelson, near Englewood, Hudson County	6	.....	Do.
	Inspections by Miller & Dyer, V. S.			
Apr. 27	Godfrey Hancock, road to Green Tree, Camden County	9	.....	Good.
27	Joseph E. Borton, road to Green Tree, Camden County	22	.....	Do.
27	John Lippincott, road to Green Tree, Camden County	4	.....	Do.
27	L. J. Kelton, Haddonfield, Camden County	3	.....	Do.
27	W. B. Munn, Haddonfield, Camden County	5	.....	Do.
27	O. J. Stockton, Cole's Landing, Camden County	1	.....	Do.
27	Charles Cramer, Cole's Landing, Camden County	2	.....	Do.
27	Stokes Cole, Cole's Landing, Camden County	2	.....	Do.
28	Joshua H. Ballinger, road to Glendale, Camden County	13	.....	Do.
28	Mark Ballinger, road to Glendale, Camden County	8	.....	Very good.
28	Hillman Bros., road to Haddonfield, Camden County	21	.....	Good.
28	Joseph K. Lippincott, road to Haddonfield, Camden County	14	.....	Do.
28	Franklin C. Ames, road to Haddonfield, Camden County	15	.....	Do.
28	Adron Clark, road to Haddonfield, Camden County	16	.....	Do.
28	Mrs. Hillman, road to Haddonfield, Camden County	12	.....	Do.
28	George Kays, road to Haddonfield, Camden County	10	.....	Do.
28	Charles Ballinger, road to Haddonfield, Camden County	3	.....	Do.
28	James Earsly, road to Haddonfield, Camden County	1	.....	Do.
29	Samuel Wilson, road Camden to Marlton, Camden County	5	.....	Do.
29	Robert Stewart, road Camden to Marlton, Camden County	4	.....	Do.
29	John Stewart, road Camden to Marlton, Camden County	6	.....	Do.
29	Thomas Terney, road Camden to Marlton, Camden County	3	.....	Do.
29	A. Cuthbert, road Camden to Marlton, Camden County	12	.....	Do.
29	Joseph T. Wiley, road Camden to Marlton, Camden County	9	.....	Do.
29	Joseph Cuthbert, jr., road Camden to Marlton, Camden County.	6	.....	Do.
29	Elwood Rockhill, road Camden to Marlton, Camden County	13	.....	Do.
29	William Graff, road to Marlton, Camden County	15	.....	Do.
29	J. L. Praul, road to Marlton, Camden County	5	.....	Do.
29	Jos. K. Lippincott, jr., road to Marlton, Camden County	28	.....	Do.
29	E. B. Davis, road to Marlton, Camden County	12	.....	Fair.
29	Alfred Bates, road to Marlton, Camden County	13	.....	Good.
29	Peter Clone, road to Marlton, Camden County	5	.....	Do.
29	Clark Gregg, road to Marlton, Camden County	7	.....	Do.
29	Samuel Redman, road to Marlton, Camden County	5	.....	Do.
29	Elwood Evans, road to Marlton, Camden County	47	.....	Do.
29	Jesse Anderson, road to Marlton, Camden County	17	.....	Do.
29	Joseph Fowler, road to Marlton, Camden County	8	.....	Do.
29	Samuel H. Griscomb, road to Marlton, Camden County	7	.....	Do.
29	Joe Hurkson, Westville, Camden County	7	.....	Do.
30	William Goldy, Westville, Camden County	9	.....	Do.
30	C. Shomaker, Westville, Camden County	19	.....	Do.
30	Charles Walls, Westville, Camden County	3	.....	Do.
30	Joseph Rambo, Camden, Camden County	6	.....	Do.
30	Daniel Patterson, Patterson road, Camden County	8	.....	Do.
30	John Spencer, Patterson road, Camden County	1	.....	Do.
30	E. S. Dobbs, Patterson road, Camden County	50	.....	Stables, dirty; animals, good.
30	Littleton Stevens, Patterson road, Camden County	1	.....	Good.
30	James Bell, road to Hedding, Camden County	40	.....	Do.
30	Philip Beaver, Patterson road, Camden County	1	.....	Do.
May 1	Esac C. Bell, road to Hedding, Camden County	8	.....	Do.
1	John Turley, road to Hedding, Camden County	18	.....	Do.
1	John Howlett, road to Woodbury, Camden County	1	.....	Do.
1	James Dobbs, road to Woodbury, Camden County	2	.....	Do.
1	John H. Allen, road to Hedding, Camden County	4	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
May 1	Thomas Wathal, road to Mount Ephraim, Camden County	14	.....	Good.
1	Samuel Mitten, road to Mount Ephraim, Camden County	2	.....	Do.
1	W. C. Nicholson, Camden road, Camden County	19	.....	Do.
1	Elwood Haines, Camden road, Camden County	15	.....	Do.
1	John Summers, road to Woodbury, Camden County	3	.....	Do.
1	John F. Starr, Camden, Camden County	1	.....	Do.
1	John Dugan, Camden, Camden County	1	.....	Do.
1	Mrs. P. Gallagher, Camden, Camden County	4	1	Do.
2	Jos. Meyers, Paulsborough, Gloucester County	1	.....	Do.
2	Ed. Miller, Paulsborough, Gloucester County	2	.....	Do.
2	W. A. Mullen, Paulsborough, Gloucester County	1	.....	Do.
2	Charles Parker, Paulsborough, Gloucester County	2	.....	Do.
2	Jos. R. Paul, Paulsborough, Gloucester County	2	.....	Do.
2	Samuel L. Miller, Paulsborough, Gloucester County	2	.....	Do.
2	Jonathan Cramer, Paulsborough, Gloucester County	2	.....	Do.
2	Stephen H. Miller, Paulsborough, Gloucester County	2	.....	Do.
2	J. G. Cox & Bro., Paulsborough, Gloucester County	2	.....	Do.
2	John Woodruff, Paulsborough, Gloucester County	1	.....	Do.
2	H. C. Loudenslager, Paulsborough, Gloucester County	2	.....	Do.
2	John Jenkins, Paulsborough, Gloucester County	1	.....	Do.
2	William D. Gill, Paulsborough, Gloucester County	28	.....	Do.
2	M. Gill & Son, near Paulsborough, Gloucester County	29	.....	Do.
2	Michael Ley, near Paulsborough, Gloucester County	1	.....	Do.
2	Charles Parker, near Paulsborough, Gloucester County	25	.....	Do.
2	Samuel Reed, near Paulsborough, Gloucester County	6	.....	Do.
2	William Dauson, near Paulsborough, Gloucester County	5	.....	Do.
2	John R. Stetson, near Paulsborough, Gloucester County	6	.....	Do.
2	William Casperson, near Paulsborough, Gloucester County	3	.....	Do.
2	John Owen, near Paulsborough, Gloucester County	9	.....	Do.
2	John D. Miller, near Paulsborough, Gloucester County	5	.....	Do.
2	Conrad Frichhold, near Paulsborough, Gloucester County	2	.....	Do.
	Inspections by Rowland & Hawk, V. S.			
Apr. 27	William J. Dowd, near Fairview, Hudson County	10	.....	Good.
27	Hermitt Sterm, near Fairview, Hudson County	12	6	Stables, filthy; animals, poor.
27	Joseph Nebbing, near Ridgefield, Bergen County	21	.....	Fair.
27	M. Clellan, near Ridgefield, Bergen County	7	.....	Good.
27	John Nabby, near Ridgefield, Bergen County	3	.....	Do.
27	Nicholas Jacobus, Ridgewood, Bergen County	9	.....	Fair.
27	J. L. Goatlez, Ridgewood, Bergen County	3	.....	Do.
27	Henry Burner, Ridgewood, Bergen County	13	.....	Do.
28	Henry Dravers, Englewood, Bergen County	8	.....	Good.
28	J. H. Edsall, Englewood, Bergen County	9	.....	Do.
28	Peter G. Holland, Englewood, Bergen County	7	.....	Do.
28	Thomas Lacy, Englewood, Bergen County	6	.....	Do.
28	M. Rochlea, Englewood, Bergen County	7	.....	Fair.
28	M. Gallavy, Englewood, Bergen County	2	.....	Good.
28	M. Banta, Englewood, Bergen County	2	.....	Do.
28	M. Sherman, near Tenafly, Bergen County	7	.....	Do.
28	M. Conklin, near Tenafly, Bergen County	3	.....	Do.
28	M. Derman, near Tenafly, Bergen County	18	.....	Do.
28	George Hyeer, near Tenafly, Bergen County	8	.....	Do.
28	Jean Van Jay, near Tenafly, Bergen County	7	.....	Do.
30	Jacob Boger, near Demerest, Bergen County	5	.....	Do.
30	B. J. Vestervelt, near Demerest, Bergen County	9	.....	Do.
30	John Vestervelt, near Demerest, Bergen County	3	.....	Fair.
30	Van Buskirk Demerest, Demerest, Bergen County	5	.....	Good.
30	Peter Demerest, Demerest, Bergen County	7	.....	Do.
30	William E. Devies, Demerest, Bergen County	5	.....	Do.
30	G. V. Demerest, Demerest, Bergen County	9	.....	Do.
30	Ralph Demerest, Demerest, Bergen County	16	.....	Do.
30	Mrs. John Marsh, near Closter, Bergen County	3	.....	Fair.
30	Peter Acker, Closter, Bergen County	8	.....	Good.
30	Fred. Kober, Norwood, Bergen County	5	.....	Fair.
30	W. McIntyre, near Tappan, Bergen County	14	.....	Do.
30	Mr. Balman, near Tappan, Bergen County	13	.....	Good.
30	Michael Griffen, near Hyack, Bergen County	6	.....	Fair.
30	M. Herring, near Hyack, Bergen County	8	.....	Good.
May 1	M. Worter, near Hyack, Bergen County	4	.....	Do.
1	Marvin Baker, near Hyack, Bergen County	12	.....	Do.
1	John Farrell, near Sparkhill, Bergen County	16	.....	Do.
1	Dr. Miller, near Sparkhill, Bergen County	4	.....	Do.
1	W. S. Gerney, near Sparkhill, Bergen County	16	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Rowland & Hawk, V. S.—Continued.			
1885.				
May 1	M. Undermunk, near Hyack, Bergen County	16	.....	Good.
2	D. Blovelt, near Hyack, Bergen County	28	3	Stables, fair; animals, poor.
2	John H. Blovelt, Bloveltville, Bergen County	18	.....	Fair.
2	G. H. Blovelt, Bloveltville, Bergen County	16	.....	Do.
2	Mark Speeler, Orangeburgh, Bergen County	12	.....	Good.
2	Mrs. M. Trumpen, Orangeburgh, Bergen County	2	.....	Do.
	Inspections by Miller & Dyer, V. S.			
May 4	Samuel T. Marlick, near Haddonfield, Camden County	9	.....	Stables, fair; animals, poor.
4	Joshua Pracock, near Haddonfield, Camden County	5	.....	Good.
4	Isaac P. Lippincott, near Haddonfield, Camden County	8	.....	Do.
4	George M. Peacock, near Haddonfield, Camden County	8	.....	Stables, fair; animals, poor.
4	Franklin Peak, near Haddonfield, Camden County	6	.....	Fair.
4	Abel Hillman, road to Haddonfield, Camden County	14	.....	Good.
4	Reuben Dobbs, road to Haddonfield, Camden County	11	.....	Do.
4	Joseph H. Anderson, road to Haddonfield, Camden County	10	.....	Do.
4	Joseph C. Browning, near Haddonfield, Camden County	19	.....	Do.
5	George Fortiner, near Glendale, Camden County	15	.....	Do.
5	Ray & Dobbs, near Glendale, Camden County	22	.....	Do.
5	Joseph Stafford, near Glendale, Camden County	28	.....	Do.
5	M. Stafford, near Glendale, Camden County	7	.....	Do.
5	E. W. Coffin, near Glendale, Camden County	33	.....	Very good.
5	A. H. Stratton, near Glendale, Camden County	21	.....	Good.
5	John Gould, near Glendale, Camden County	1	.....	Do.
5	Alexander Cooper, near Glendale, Camden County	88	.....	Do.
6	Samuel N. Rhoades, Mount Ephraim, Camden County	43	3	Do.
6	Elwood Ronand, country, Camden County	24	.....	
6	Stacey Cooper, country, Camden County	1	.....	Do.
6	William T. Hatcher, country, Camden County	20	.....	Do.
6	Burr Haines, country, Camden County	21	.....	Do.
7	Samuel McMasters, country, Camden County	3	.....	Poor.
7	John Walker, near Snow Hill, Camden County	21	.....	Good.
7	Jackson Briggs, near Snow Hill, Camden County	3	.....	Do.
7	George Nesger, near Snow Hill, Camden County	1	.....	Do.
7	George Rhoades, near Snow Hill, Camden County	2	.....	Do.
7	Samuel A. Bacon, near Snow Hill, Camden County	4	.....	Do.
7	Aaron Thomas, Snow Hill, Camden County	1	.....	Do.
7	Mary Chalman, Snow Hill, Camden County	3	.....	Do.
7	J. B. Chatman, near Snow Hill, Camden County	2	.....	Do.
7	John Gill, near Snow Hill, Camden County	33	.....	Do.
7	Isaac Albertson, Snow Hill, Camden County	3	.....	Do.
8	Elwood Rulor, Magnolia Station, Camden County	9	.....	Do.
8	Samuel Kane, Magnolia Station, Camden County	2	.....	Do.
8	George W. Haines, country, Camden County	15	.....	Do.
8	Martin Schupert, country, Camden County	26	.....	Do.
8	Charles W. Cobb, country, Camden County	8	.....	Do.
8	Stephen McDavitt, country, Camden County	1	.....	Do.
8	Joseph Warwick, country, Camden County	6	.....	Do.
8	Charles Severns, Blackwood Town, Camden County	2	.....	Do.
8	James McManus, Blackwood Town, Camden County	1	.....	Do.
8	Edward Comp, Blackwood Town, Camden County	20	.....	Do.
8	Philip N. Peters, Blackwood Town, Camden County	1	.....	Do.
8	James Smith, Chew's Landing, Camden County	5	.....	Do.
8	Joseph W. Johnson, Chew's Landing, Camden County	4	.....	Do.
8	Samuel Bidel, Chew's Landing, Camden County	3	.....	Do.
9	Jonas McKitterpick, near Magnolia, Camden County	8	.....	Do.
9	William Strang, near Magnolia, Camden County	4	.....	Do.
9	C. S. and J. J. Albertson, near Magnolia, Camden County	19	.....	Do.
9	Charles Pidgeon, near Magnolia, Camden County	1	.....	Do.
9	Michael P. McGarvey, Clement's Bridge, Camden County	2	.....	Do.
9	Richard Davis, Clement's Bridge, Camden County	6	.....	Do.
9	William B. Marple, near Chew's Landing, Camden County	5	.....	Do.
9	John S. Jaggers, Clement's Bridge, Camden County	22	.....	Do.
9	B. Larson, Zanesville, Camden County	2	.....	Do.
9	George W. Barrett, Clement's Bridge, Camden County	4	.....	Do.
9	John Jaggart, Mount Ephraim, Camden County	1	.....	Do.
9	John Schubert, Chew's Landing, Camden County	1	.....	Do.
9	Thomas G. Zane, sr., Chew's Landing, Camden County	2	.....	Do.
9	Abraham Brown, Clement's Bridge, Camden County	3	.....	Do.
9	Thomas G. Zane, jr., Chew's Landing, Camden County	5	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Rowland & Hawk, V. S.			
1885.				
May 4	Patrick Bremmer, near Blovitsville, Bergen County	6	.....	Good.
4	H. Kohn, near Blovitsville, Bergen County	4	.....	Fair.
4	Richard Costner, near Blovitsville, Bergen County	6	.....	Good.
4	Mrs. George Ward, near Blovitsville, Bergen County	8	.....	Do.
4	John Yates, near Blovitsville, Bergen County	10	.....	Fair
4	Peter White, near Blovitsville, Bergen County	6	.....	Good.
4	John Fifer, near Demarest, Bergen County	12	.....	Do.
4	Henry Wilson, near Demarest, Bergen County	6	.....	Do.
4	John Demarest, near Demarest, Bergen County	6	.....	Do.
5	Unknown, near Englewood, Bergen County	1	1	Bad.
5	John Rive, near Englewood, Bergen County	7	.....	Fair.
5	M. Baldwin, near Englewood, Bergen County	14	.....	Good.
5	H. Cooper, near Englewood, Bergen County	48	.....	Do.
5	E. Waterberry, near Englewood, Bergen County	10	.....	Do.
5	William Wood, near Englewood, Bergen County	10	.....	Fair.
5	J. T. Dermott, near Englewood, Bergen County	26	.....	Good.
5	William Roth, near Englewood, Bergen County	16	.....	Stables, fair; animals, good.
6	Abraham Lydeck, near Englewood, Bergen County	8	.....	Good.
6	Henry Duryea, near Englewood, Bergen County	6	.....	Do.
6	H. J. Bramer, near Ridgefield, Bergen County	6	.....	Do.
6	A. Dermott, near Ridgefield, Bergen County	14	.....	Fair.
6	J. Vestervelt, near Ridgefield, Bergen County	9	.....	Good.
6	John H. Lysle, near Ridgefield, Bergen County	10	.....	Stables, fair; animals, good.
6	Peter Buckley, near Ridgefield, Bergen County	8	.....	Fair.
6	W. Christie, near Bergenfield, Bergen County	12	.....	Good.
6	J. A. Herring, near Bergenfield, Bergen County	2	.....	Do.
	Inspections by Miller & Dyer, V. S.			
May 11	C. B. Small, near Westville, Gloucester County	2	.....	Good.
11	John T. Powell, near Westville, Gloucester County	1	.....	Do.
11	Furman Lawrence, near Westville, Gloucester County	2	.....	Do.
11	Merritt Pierce, near Westville, Gloucester County	3	.....	Do.
11	Andrew Blake, near Westville, Gloucester County	22	.....	Stables, poor; animals, good.
11	James Lukins, near Westville, Gloucester County	8	.....	Stable, fair; animals, good.
11	Joseph Eldridge, near Westville, Gloucester County	3	.....	Good.
11	Tabor Rambo, near Westville, Gloucester County	3	.....	Stables, fair; animals, good.
12	Samuel M. Spahn, Red Bank, Gloucester County	13	.....	Good.
12	Henry Bickley, Red Bank, Gloucester County	1	.....	Do.
12	William Blake, Red Bank, Gloucester County	12	.....	Do.
12	James Duer, Red Bank, Gloucester County	2	.....	Do.
12	Frank Matlack, Red Bank, Gloucester County	1	.....	Do.
12	Charles Roselle, Red Bank, Gloucester County	1	.....	Do.
12	William Willard, Red Bank, Gloucester County	1	.....	Do.
12	Chris. Schall, Red Bank, Gloucester County	3	.....	Do.
12	George Gruff, Red Bank, Gloucester County	3	.....	Do.
12	Dennis Blake, Red Bank, Gloucester County	4	.....	Do.
12	Joseph Lang, Red Bank, Gloucester County	13	.....	Do.
12	James Murphy, Red Bank, Gloucester County	8	.....	Do.
13	Joseph A. Green, near Thoroughfare, Gloucester County	2	.....	Do.
13	John A. Brown, near Thoroughfare, Gloucester County	2	.....	Do.
13	Joseph Low, Thoroughfare, Gloucester County	12	.....	Do.
13	Henry Fruger, sr., Thoroughfare, Gloucester County	2	.....	Do.
13	Henry Fruger, jr., Thoroughfare, Gloucester County	2	.....	Do.
13	John R. Postol, Thoroughfare, Gloucester County	1	.....	Do.
13	John Estler, Thoroughfare, Gloucester County	3	.....	Do.
13	John Eastlack, Thoroughfare, Gloucester County	3	.....	Do.
13	Thomas Eastlack, Thoroughfare, Gloucester County	5	.....	Do.
14	George Leonard, near Paulsborough, Gloucester County	3	.....	Do.
14	Charles Leonard, near Paulsborough, Gloucester County	14	.....	Stables, fair; animals, good.
14	Albert Zahn, near Paulsborough, Gloucester County	2	.....	Fair.
14	William Bambo, near Crown Point, Gloucester County	6	.....	Good.
14	J. L. Hewett, country farm, Gloucester County	13	.....	Stables, good; animals, fair.
14	Wilson Fitzgerald, country farm, Gloucester County	15	.....	Good
14	Clayton N. Shuster, country farm, Gloucester County	16	.....	Do.
14	Isaac Thompson, country farm, Gloucester County	25	.....	Do.
14	Lewis K. Lukins, near Paulsborough, Gloucester County	1	.....	Do.
15	Isaac F. Allen, near Paulsborough, Gloucester County	15	.....	Do.
15	John Denstan, near Paulsborough, Gloucester County	4	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1883.				
May 15	George C. Hewett, near Paulsborough, Gloucester County	1	.....	Good.
15	Daniel Packer, near Paulsborough, Gloucester County	4	.....	Do.
15	William Lloyd, near Paulsborough, Gloucester County	25	.....	Do.
15	Coleman Packer, near Paulsborough, Gloucester County	1	.....	Stables, good; animal, fair.
15	John W. Harmold, near Paulsborough, Gloucester County	23	.....	Do.
15	Ben. Wright, near Paulsborough, Gloucester County	6	.....	Do.
16	Edward Starr, near Woodbury, Gloucester County	6	.....	Good.
16	Edward H. Clements, Woodbury, Gloucester County	1	.....	Poor.
16	Caspar Budd, Woodbury, Gloucester County	17	.....	Good.
16	John L. Sharp, near Woodbury, Gloucester County	23	.....	Fair.
16	Philip Windish, near Woodbury, Gloucester County	10	.....	Do.
16	Samuel H. Heritage, near Woodbury, Gloucester County	13	.....	Stables, fair; animals, poor.
	Inspections by J. W. Hawk, V. S.			
May 8	S. E. Demarest, Schraalenburgh, Bergen County	6	.....	Good.
8	J. Sebuskey, Schraalenburgh, Bergen County	3	.....	Do.
8	J. D. Geleth, Schraalenburgh, Bergen County	5	.....	Do.
8	J. Christin, Schraalenburgh, Bergen County	10	.....	Do.
8	Morris Cooper, Schraalenburgh, Bergen County	10	.....	Do.
8	J. Arms, Schraalenburgh, Bergen County	15	.....	Do.
8	Mr. Bond, Schraalenburgh, Bergen County	5	.....	Do.
9	H. Bridwell, Irvington, Essex County	8	.....	Do.
9	K. Kesner, Irvington, Essex County	15	.....	Do.
9	H. Glacey, Irvington, Essex County	15	.....	Do.
9	M. Eager, Irvington, Essex County	8	.....	Do.
9	John J. Crask, Irvington, Essex County	6	.....	Do.
9	C. Kolty, Irvington, Essex County	35	.....	Do.
9	M. Draker, Irvington, Essex County	18	.....	Do.
11	J. Smith, Maywood, Essex County	5	.....	Do.
11	H. E. Smith, Hackensack, Bergen County	4	.....	Do.
11	C. Breckenridge, Hackensack, Bergen County	3	.....	Do.
11	H. Brinkerhoff, Hackensack, Bergen County	14	.....	Do.
11	J. J. Brinkerhoff, Hackensack, Bergen County	7	.....	Do.
11	P. Thomas, Hackensack, Bergen County	3	.....	Do.
11	J. C. Transill, Hackensack, Bergen County	6	.....	Do.
12	M. Reederburg, Lodi, Bergen County	12	.....	Do.
12	F. M. Carry, Lodi, Bergen County	15	.....	Do.
12	Mrs. Hoffmarten, Lodi, Bergen County	9	.....	Do.
12	J. Frebrieskie, Lodi, Bergen County	3	.....	Do.
12	J. S. Pear, Lodi, Bergen County	13	.....	Do.
12	John Nemeen, Lodi, Bergen County	5	.....	Do.
12	P. Manley, Lodi, Bergen County	12	.....	Do.
12	J. McCindry, Belleville, Essex County	4	.....	Do.
12	Mrs. Rians, Belleville, Essex County	7	.....	Do.
13	J. Reichenburg, Arlington, Hudson County	5	.....	Do.
13	R. Romine, Lodi, Bergen County	12	.....	Do.
13	H. Ward, East Newark, Hudson County	41	.....	Do.
13	Father Kearon, Arlington, Hudson County	4	.....	Do.
13	John Roach, Arlington, Hudson County	24	.....	Do.
13	P. Kerney, East Newark, Hudson County	7	.....	Do.
15	Mike Dunn, Arlington, Hudson County	5	.....	Do.
15	James Smith, Arlington, Hudson County	12	.....	Do.
15	Martin Shucroft, Jersey Heights, Hudson County	10	.....	Do.
15	Mr. Balshaugh, Jersey Heights, Hudson County	4	.....	Do.
15	T. Keroney, Jersey Heights, Hudson County	9	.....	Do.
15	L. Collins, Jersey Heights, Hudson County	14	.....	Do.
15	T. Kelly, Jersey Heights, Hudson County	6	.....	Do.
15	Mr. Owen, Jersey Heights, Hudson County	8	.....	Do.
15	H. Leventhal, Hoboken, Hudson County	47	.....	Stables, very filthy; animals, fair.
16	H. Feinburg, Secaucus, Hudson County	89	.....	Do.
16	G. Reed, Jersey City, Hudson County	5	.....	Good.
16	James Mourgy, Hudson County	12	.....	Do.
16	Mrs. Burr, Jersey City, Hudson County	5	.....	Do.
16	O. Conley, Secaucus, Hudson County	6	.....	Do.
18	C. Paul, Hudson County	3	.....	Do.
18	C. Hilderband, Hudson County	8	.....	Do.
18	G. Flickstein, Hudson County	13	.....	Stables, filthy; animals, fair.
18	Mr. Brakewell, Hudson County	9	.....	Stables, fair; animals, good.
18	Mr. Himty, Hudson County	12	.....	Stables, good; animals, fair.
18	John Glenfield, North Bergen, Hudson County	3	.....	Good.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by J. W. Hawk, V. S.—Continued.			
1885.				
May 18	C. Stikburger, North Bergen, Hudson County	8	.....	Good.
18	Mr. Columbus, North Bergen, Hudson County	7	.....	Do.
18	A. Halce, Hudson County	15	.....	Stables, filthy; animals, fair.
	Inspections by Miller & Dyer, V. S.			
May 18	Mary Coins, near Woodbury, Gloucester County	3	.....	Good.
18	Manuel Pfeiffer, near Woodbury, Gloucester County	1	.....	Do.
19	John Twelves, Woodbury, Gloucester County	3	.....	Do.
19	Pat. Jordan, Woodbury, Gloucester County	1	.....	Do.
19	Leonard Brown, Woodbury, Gloucester County	1	.....	Do.
19	Mrs. Duffield, Woodbury, Gloucester County	1	.....	Do.
19	Joseph Rockhull, Woodbury, Gloucester County	1	.....	Do.
19	David Fletcher, Woodbury, Gloucester County	1	.....	Do.
19	John Rockhull, Woodbury, Gloucester County	1	.....	Do.
20	M. Teenfer, Pavonia, Camden County	13	2	Do.
21	L. Levi Jones, near Lumberton, Burlington County	13	2	Do.
21	William S. Conner, near Woodbury, Gloucester County	10	.....	Do.
21	Thomas S. Kircher, near Woodbury, Gloucester County	23	.....	Stables, good; animals, fair.
21	S. D. Dobbs, near Woodbury, Gloucester County	14	.....	Good.
21	William Knight, near Woodbury, Gloucester County	6	.....	Do.
21	Joseph Moore, jr., near Woodbury, Gloucester County	11	.....	Do.
21	Joseph Moore, near Woodbury, Gloucester County	15	.....	Do.
21	Anderson & Kay, near Woodbury, Gloucester County	17	.....	Do.
21	S. D. Dobbs, jr., near Woodbury Gloucester County	6	.....	Do.
21	M. W. Newton, Woodbury, Gloucester County	4	.....	Do.
21	Dr. Wallace McGeorge, Woodbury, Gloucester County	1	.....	Do.
21	R. H. Davis, Woodbury, Gloucester County	9	.....	Do.
21	E. T. Bradway, Woodbury, Gloucester County	3	.....	Do.
21	Lewis Green, Woodbury, Gloucester County	5	.....	Do.
21	Aug. Prehl, Woodbury, Gloucester County	1	.....	Do.
21	John T. Tatem, Woodbury, Gloucester County	8	.....	Do.
21	Lara Madara, Woodbury, Gloucester County	2	.....	Do.
21	John Denson, Woodbury, Gloucester County	1	.....	Do.
21	George Blinsenger, Woodbury, Gloucester County	3	.....	Do.
21	John Kerns, Woodbury, Gloucester County	6	.....	Do.
21	John Fell, Woodbury, Gloucester County	5	.....	Do.
21	John Nulty, Woodbury, Gloucester County	10	.....	Do.
22	Harry Clements, Woodbury, Gloucester County	2	.....	Do.
22	A. C. Ruderow, Woodbury, Gloucester County	6	.....	Do.
22	John T. Pierson, Woodbury, Gloucester County	4	.....	Do.
22	C. T. Johnson, near Woodbury, Gloucester County	19	.....	Do.
22	Thomas Cogil, near Woodbury, Gloucester County	5	.....	Do.
22	John Leonard, near Woodbury, Gloucester County	2	.....	Do.
22	Ben. J. Lord, near Woodbury, Gloucester County	23	.....	Do.
22	Clement Ogden, near Woodbury, Gloucester County	2	.....	Do.
22	Mrs. Cain, near Woodbury, Gloucester County	7	.....	Do.
22	Frank T. Hendrickson, near Woodbury, Gloucester County	7	.....	Do.
23	George Fox, Mantua road, Gloucester County	1	.....	Do.
23	Charles Wilson, Mantua road, Gloucester County	3	.....	Do.
23	Charles Barker, Mantua road, Gloucester County	5	.....	Good.
23	David Jessup, Mantua road, Gloucester County	5	.....	Do.
23	C. C. Pancoast, Mantua road, Gloucester County	5	.....	Do.
23	James C. Griscomb, Mantua road, Gloucester County	17	.....	Do.
23	Pat. Cain, Mantua road, Gloucester County	1	.....	Do.
23	Charles T. Maloney, Mantua road, Gloucester County	6	.....	Do.
23	Eastleck & Jester, Mantua road, Gloucester County	20	.....	Do.
	Inspections by J. W. Hawk, V. S.			
May 19	H. Fisher, Secaucus, Hudson County	9	.....	
19	J. West, Secaucus, Hudson County	17	.....	
19	Commons, Secaucus, Hudson County	10	.....	
19	A. Leiberman, Secaucus, Hudson County	50	.....	Stables, very filthy; animals, fair.
19	F. Casper, Secaucus, Hudson County	9	.....	Good.
21	James Breslin, East Newark, Hudson County	6	.....	Do.
21	T. Kelet, East Newark, Hudson County	5	.....	Stables, fair; animals, good.
21	John Rider, East Newark, Hudson County	3	.....	Good.
21	P. Hawk, East Newark, Hudson County	1	.....	Do.
21	Jacob Marr, East Newark, Hudson County	7	.....	Do.
21	James Davis, East Newark, Hudson County	3	.....	Do.
21	John Boyd, East Newark, Hudson County	28	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by J. W. Hawk, V. S.—Continued.			
1885.				
May 21	A. Miller, East Newark, Hudson County	8	.....	Good.
21	Mary Cornit, East Newark, Hudson County	7	.....	Do.
21	M. Maloney, East Newark, Hudson County	6	.....	Do.
22	Mr. Freeling, East Newark, Hudson County	3	.....	Do.
22	Mrs. Subiss, East Newark, Hudson County	3	.....	Do.
22	Cathrine Kinton, East Newark, Hudson County	5	.....	Do.
22	Mr. Tully, East Newark, Hudson County	4	.....	Do.
22	Mrs. Gosman, East Orange, Essex County	6	.....	Do.
22	W. Clayton, East Newark, Hudson County	10	.....	Stables, good; animals, fair.
22	Mrs. Harnger, East Orange, Essex County	5	.....	Good.
22	Tab. Mills, East Orange, Essex County	2	.....	Do.
22	Robert Hutman, Newark, Essex County	6	.....	Do.
22	James Anderson, Newark, Essex County	3	.....	Do.
22	James McMans, Newark, Essex County	2	.....	Do.
22	Commons, East Orange, Essex County	8	.....	Do.
23	Mr. McConnell, East Orange, Essex County	12	.....	Do.
23	John Orkenge, East Orange, Essex County	12	.....	Do.
23	Moren Brannen, East Orange, Essex County	9	.....	Do.
23	C. Littelin, East Orange, Essex County	10	.....	Do.
23	Mike Burns, West Orange, Essex County	23	.....	Do.
23	Mr. Robertson, West Orange, Essex County	19	.....	Do.
23	Mr. Burk, Orange, Essex County	8	.....	Do.
23	Mr. Hunter, Waverly, Essex County	15	.....	Do.
25	A. Ball, Irvington, Essex County	11	.....	Do.
25	G. Wilson, Irvington, Essex County	3	.....	Do.
25	W. S. Edwards, Irvington, Essex County	8	.....	Do.
25	A. Dislay, Newark, Essex County	3	.....	Do.
25	S. Carroll, Newark, Essex County	11	.....	Do.
25	Mrs. Shulse, Newark, Essex County	8	.....	Do.
25	W. G. Ocklin, Newark, Essex County	12	.....	Do.
25	P. Tessen, Newark, Essex County	12	.....	Do.
26	Mr. Stone, Irvington, Essex County	13	.....	Do.
26	C. Crowell, Irvington, Essex County	12	.....	Do.
26	Thomas Brent, Irvington, Essex County	5	.....	Do.
26	W. Elsman, Irvington, Essex County	13	.....	Do.
26	H. Hackins, Irvington, Essex County	13	.....	Do.
26	——, Irvington, Essex County	10	.....	Do.
26	Mr. Smith, Irvington, Essex County	12	.....	Do.
27	M. R. Smith, South Orange, Essex County	15	.....	Do.
27	——, Essex County	10	.....	Do.
27	W. H. Smith, South Orange, Essex County	6	.....	Do.
27	A. Brown, South Orange, Essex County	48	.....	Do.
28	Mr. Messly, Newark, Essex County	20	.....	Do.
28	Mr. Murray, Newark, Essex County	10	.....	Do.
28	——, Essex County	3	.....	Do.
28	Mr. Hutzel, Newark, Essex County	4	.....	Do.
28	John Bowers, Newark, Essex County	4	.....	Do.
28	B. Hanlin, Newark, Essex County	1	.....	Do.
28	S. Goden, South Orange, Essex County	6	.....	Do.
28	W. Porter, South Orange, Essex County	4	.....	Do.
28	L. Pearson, South Orange, Essex County	8	.....	Do.
30	John Bollard, Newark, Essex County	6	.....	Do.
30	R. Pebbered, Newark, Essex County	12	.....	Do.
30	A. Byanes, Newark, Essex County	15	.....	Do.
30	L. Tichnor, Newark, Essex County	18	.....	Do.
30	F. Mistler, Newark, Essex County	20	.....	Do.
30	Mr. Harrison, Newark, Essex County	15	.....	Do.
	Inspections by Miller and Dyer, V. S.			
26	M. Feenfer, Pavonia, Camden County	9	2	Good.
27	W. C. Wood, Ellisburg, Camden County	17	.....	Fair.
28	S. Levi Jones, Lumberton, Burlington County	11	.....	Do.
28	Sundry, Camden, Camden County	57	.....	Do.
28	Sundry, Gloucester, Camden County	42	.....	Do.
29	S. Jones, Lumberton, Burlington County	10	2	Do.
June 1	Espen Ashton, Camden, Camden County	2	.....	Do.
1	P. Galligher, Camden, Camden County	7	.....	Stables, fair; animals, good.
1	L. Backrack, Camden Camden County	5	.....	Stables, fair; animals, poor.
1	James Mooney, Camden, Camden County	2	.....	Good.
1	Michael Turner, Camden, Camden County	2	.....	Do.
2	William Dawson, Swedsborough, Gloucester County	13	.....	Do.
2	William Stewart, Swedsborough, Gloucester County	11	.....	Fair.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
June 2	Henry Mitchell, Swedsborough, Gloucester County	9	.....	Good.
2	George Hentage, Swedsborough, Gloucester County	9	.....	
2	John Batter, Swedsborough, Gloucester County	18	.....	Do.
2	Frank Rulow, Swedsborough, Gloucester County	17	.....	Do.
2	James Jessup, Mullica Hill, Gloucester County	2	.....	Do.
3	John Steward, Clarksborough, Gloucester County	11	.....	Do.
3	C. Green, Clarksborough, Gloucester County	8	.....	Do.
3	J. Green, Clarksborough, Gloucester County	14	.....	Animals, fair.
3	Thomas B. Hughes, Clarksborough, Gloucester County	19	.....	Stables, fair; animals, poor.
3	W. H. Stewart, Clarksborough, Gloucester County	5	.....	Fair.
3	William Schuster, Clarksborough, Gloucester County	8	.....	Good.
3	J. McIlvaine, Clarksborough, Gloucester County	23	.....	Do.
4	R. J. Kaighn, Mount Ephraim, Gloucester County	12	.....	Do.
5	A. Cooper and Son, Ashland, Gloucester County	45	.....	Stables, very good; animals, good.
	Inspections by J. W. Hawk, V. S.			
June 1	——, near Irvington, Essex County	12	.....	Good.
1	O. Littlefield, near Irvington, Essex County	18	.....	Stables, filthy; animals, fair.
1	I. Andrews, Irvington, Essex County	12	.....	Good.
1	John Eignelone, Irvington, Essex County	14	.....	Do.
1	Mr. Farrow, Irvington, Essex County	15	.....	Do.
1	Mr. Gough, Irvington, Essex County	25	.....	Do.
2	Mr. Tichnor, Irvington, Essex County	24	.....	Do.
2	P. Larney, Irvington, Essex County	19	.....	Do.
2	S. Simon, Irvington, Essex County	24	.....	Do.
2	E. A. Underhill, near Irvington, Essex County	19	.....	Stables, filthy; animals, bad.
2	John Cate, near Irvington, Essex County	13	.....	Good.
3	Commons, Hoboken, Hudson County	10	.....	Fair.
3	Herwitz & Leventhol, Hoboken, Hudson County	40	.....	Stables filthy; animals, fair.
4	Mr. Fisher, West New York, Bergen County	8	.....	Good.
4	E. Winkle, West New York, Bergen County	9	.....	Do.
4	M. Kinsteg, West New York, Bergen County	10	.....	Do.
4	Mr. Koker, West New York, Bergen County	9	.....	Stables, filthy; animals, fair.
4	A. McClorand, Weehawken, Bergen County	9	.....	Good.
5	A. Felix, West New York, Bergen County	18	.....	Stables, filthy; animals, fair.
6	H. Naff, Newark, Essex County	10	.....	Stables, filthy; animals, poor.
6	Mr. Haritz, Newark, Essex County	12	.....	Good.
6	John Hart, Newark, Essex County	8	.....	Stables, filthy; animals, good.
6	John Kennedy, Newark, Essex County	6	.....	Animals, good.
6	Mike Murphy, Newark, Essex County	1	.....	Good.
6	C. Connor, Newark, Essex County	4	.....	Do.
6	Mr. Smith, Newark, Essex County	6	.....	Fair.
6	Mr. Doyle, Newark, Essex County	18	.....	Stables, filthy; animals, fair.
6	Commons, Newark, Essex County	6	.....	Good.
8	John Laba, Newark, Essex County	6	.....	Do.
8	C. Daley, Newark, Essex County	14	.....	Do.
8	Mr. Cramer, Newark, Essex County	22	.....	Fair.
8	C. Nugent, Newark, Essex County	8	.....	Do.
8	G. Johnson, Newark, Essex County	16	.....	Do.
8	H. Metz, Newark, Essex County	10	.....	Do.
8	Commons, Newark, Essex County	10	.....	Do.
9	John Oulrich, Newark, Essex County	17	.....	Good.
9	P. Malcaby, Greenville, Hudson County	23	.....	Do.
9	John Combes, Bayonne, Hudson County	28	.....	Do.
9	—— ——, Bayonne, Hudson County	16	.....	Do.
10	J. H. Pieler, Bayonne, Hudson County	19	.....	Do.
10	James Casety, Bayonne, Hudson County	9	.....	Do.
10	Commons, Bayonne, Hudson County	8	.....	Do.
10	C. Palmer, Greenville, Hudson County	9	.....	Stables, filthy; animals, fair.
10	Commons, Greenville, Hudson County	13	.....	Good.
10	P. Wiseman, Jersey City, Hudson County	14	.....	Do.
11	Mr. McCann, Jersey City, Hudson County	3	.....	Do.
12	John Maher, Sterling, Morris County	55	.....	Fair.
12	Clark B. Moffett, Sterling, Morris County	45	.....	Good
13	F. Blancke, Linden, Union County	90	2	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition
	Inspections by J. W. Hawk, V. S.—Continued.			
1885.				
June 15	R. Cornish, Sterling, Morris County	14	.....	Good.
15	The Swamps, Sterling, Morris County	65	.....	Do.
	Inspections by Miller & Dyer, V. S.			
June 8	George Ford, near Swedesborough, Gloucester County	1	.....	Fair.
8	Jos. Moore, Swedesborough, Gloucester County	1	.....	Do.
8	Jonathan A. Balton, Swedesborough, Gloucester County	15	.....	Good.
8	John Ballinger, near Mullica Hill, Gloucester County	6	.....	Stables, good; animals, fair.
8	David Borton, near Mullica Hill, Gloucester County	8	.....	Good.
8	John C. Shiver, near Mullica Hill, Gloucester County	11	.....	Do.
8	Aquilla Shute, near Mullica Hill, Gloucester County	3	.....	Do.
8	R. D. Ridgway, near Mullica Hill, Gloucester County	5	.....	Do.
8	J. Shute, near Woodstown, Gloucester County	10	.....	Do.
8	Charles Lippincott, near Woodstown, Gloucester County	4	.....	Do.
8	James B. Colson, near Woodstown, Gloucester County	21	.....	Fair.
8	Thomas L. Edwards, near Woodstown, Salem County	11	.....	Do.
8	Thomas Borton, near Woodstown, Salem County	15	.....	Good.
8	Joseph Cole, Swedesborough, Gloucester County	9	.....	Stables, fair; animals, good.
8	Henry Sharp, Swedesborough, Gloucester County	22	.....	Good.
8	Harry Hurf, Swedesborough, Gloucester County	11	.....	Do.
8	David Russell, Swedesborough, Gloucester County	1	.....	Do.
8	Henry Pancoast, Swedesborough, Gloucester County	12	.....	Do.
8	George Shivler, Mullica Hill, Gloucester County	13	.....	Do.
8	Edward Kirby, Mullica Hill, Gloucester County	10	.....	Do.
9	Thomas Mounce, near Mullica Hill, Gloucester County	14	.....	Do.
9	R. Adams, near Mullica Hill, Gloucester County	1	.....	Do.
9	George Heritage, sr., near Mullica Hill, Gloucester County	8	.....	Poor.
9	George Carter, near Mullica Hill, Gloucester County	15	.....	Good.
9	George W. Skinner, Swedesborough, Gloucester County	4	.....	Do.
9	Fry Hopkins, Mullica Hill, Gloucester County	3	.....	Do.
9	James Bennett, Mullica Hill, Gloucester County	2	.....	Do.
9	William F. Irdill, Mullica Hill, Gloucester County	1	.....	Do.
9	Charles P. Shute, Mullica Hill, Gloucester County	1	.....	Do.
9	Amos Loyd, Mullica Hill, Gloucester County	1	.....	Do.
9	John Dunlap, Mullica Hill, Gloucester County	2	.....	Do.
9	George Whetherby, Mullica Hill, Gloucester County	7	.....	Do.
9	Jacob Kirley, Mullica Hill, Gloucester County	3	.....	Do.
9	George Ballinger, Mullica Hill, Gloucester County	11	.....	Do.
9	Patrick Lyons, Mullica Hill, Gloucester County	1	.....	Do.
9	William Costello, Mullica Hill, Gloucester County	7	.....	Do.
9	Edw. Shute, Mullica Hill, Gloucester County	8	.....	Do.
9	John Steading, Mullica Hill, Gloucester County	7	.....	Fair.
9	Winfield Sitherns, Mullica Hill, Gloucester County	12	.....	Good.
10	William La Dow, Harrisonville, Gloucester County	1	.....	Do.
10	Miss Madara, Harrisonville, Gloucester County	1	.....	Do.
10	William Pinn, Harrisonville, Gloucester County	1	.....	Do.
10	Mr. Dubois, Harrisonville, Gloucester County	6	.....	Do.
10	Isaac Hurff, Harrisonville, Gloucester County	12	.....	Fair.
10	George Horner, Harrisonville, Gloucester County	23	.....	Good.
10	Misses Lippincott, Harrisonville, Gloucester County	1	.....	Do.
10	William Kirman, Harrisonville, Gloucester County	1	.....	Do.
10	Charles L. Petersen, Harrisonville, Gloucester County	1	.....	Do.
10	John Costello, Harrisonville, Gloucester County	4	.....	Fair.
10	Walter Parsons, Harrisonville, Gloucester County	1	.....	Good.
10	Thomas Lofty, Harrisonville, Gloucester County	1	.....	
10	Hugh Grimshow, Harrisonville, Gloucester County	7	.....	Do.
10	Fred. Gerlack, Harrisonville, Gloucester County	16	.....	Do.
11	J. Frank Moore, Swedesborough, Gloucester County	2	.....	Do.
11	Samuel DeWalt, Swedesborough, Gloucester County	5	.....	Do.
11	Benjamin Shiler, Swedesborough, Gloucester County	1	.....	Do.
11	Jacob Strinman, Swedesborough, Gloucester County	1	.....	Do.
11	Nicholas Bahman, Swedesborough, Gloucester County	25	.....	Stables, fair; animals, good.
11	Alfred Lippincott, Swedesborough, Gloucester County	16	.....	Stables, good; animals, fair.
11	Thomas E. Turner, Harrisonville, Gloucester County	14	.....	Good.
11	C. Ryan, Harrisonville, Gloucester County	5	.....	Fair.
11	Fred. Rapp, Harrisonville, Gloucester County	3	.....	Good.
11	Lawrence Rowe, near Swedesborough, Gloucester County	6	.....	Fair.
11	John Locke, near Swedesborough, Gloucester County	5	.....	Do.
11	Thomas Morrison, near Swedesborough, Gloucester County	2	.....	Do.
11	Patrick Monaghan, near Swedesborough, Gloucester County	2	.....	Do.
11	Andrew Morrison, near Swedesborough, Gloucester County	2	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885. June 11	Benjamin Batlon, near Swedesborough, Gloucester County ..	2	.....	Stables, fair; animals, poor.
11	Vanneman & Bro., near Swedesborough, Gloucester County .	4	.....	Good.
11	D. Oliphant, near Swedesborough, Gloucester County.....	4	.....	Stables, fair; animals, good.
11	Jos. Smith, near Swedesborough, Gloucester County.....	2	.....	Fair.
11	Benjamin Zaine, near Swedesborough, Gloucester County....	3	.....	Do.
11	Henry Mitchell, near Swedesborough, Gloucester County....	1	.....	Do.
11	Walter S. Bassett, near Swedesborough, Gloucester County..	1	.....	Do.
12	Wesley B. Lew Allen, near Swedesborough, Gloucester Co...	28	.....	Good.
12	Alfred Black, near Battonville, Gloucester County	7	.....	Do.
12	Jos. Black, near Battonville, Gloucester County	5	.....	Do.
12	Charles P. Batton, near Battonville, Gloucester County	3	.....	Stables, fair; animals, good.
12	Jacob Shiveler, Battontown, Gloucester County.....	4	.....	Good.
12	John Mitchell, Battontown, Gloucester County.....	4	.....	Fair.
12	Samuel Longacre, near Battontown, Gloucester County	2	.....	Do.
12	Conrad Nolte, Battontown, Gloucester County.....	2	.....	Do.
12	Samuel Morrell, near Battontown, Gloucester County.....	2	.....	Do.
12	Eel. Richardett, near Battontown, Gloucester County	1	.....	Do.
12	Joseph Herritage, near Battontown, Gloucester County.....	8	.....	Do.
12	Michael Duffield, near Battontown, Gloucester County.....	5	.....	Good.
12	John P. Howey, near Battontown, Gloucester County.....	7	.....	Fair.
12	Jacob Mattison, Battontown, Gloucester County.....	1	.....	Do.
12	Fox & McGlinsey, Battontown, Gloucester County.....	4	.....	Do.
12	Adrian P. Locke, Battontown, Gloucester County	3	.....	Good.
12	Ben. Crisper, Battontown, Gloucester County	7	.....	Fair.
12	William Davis, Battontown, Gloucester County.....	7	.....	Good.
12	Mr. Dunham, Battontown, Gloucester County.....	2	.....	Fair.
12	Mrs. Coogans, Battontown, Gloucester County	1	.....	Do.
13	M. Fennfer, Pavonia, Camden County	1	.....	Do.
15	Patrick Conley, Harrisonville, Gloucester County.....	3	.....	Good.
15	Henry Hotten, Harrisonville, Gloucester County.....	6	.....	Do.
15	Mrs. Hanna M. Moore, Harrisonville, Gloucester County	3	.....	Do.
15	Charles Wilson, Cloverdale, Gloucester County.....	5	.....	Stables, fair; animals, poor.
15	John Black, Cloverdale, Gloucester County	2	.....	Fair.
15	Theo. Smeter, Cloverdale, Gloucester County.....	1	.....	
15	Samuel De Vault, Cloverdale, Gloucester County.....	6	.....	Good.
15	William String, Cloverdale, Gloucester County.....	3	.....	Fair.
15	Charles B. Robinson, Cloverdale, Gloucester County	12	.....	Do.
15	Hart Agden, Battontown, Gloucester County	2	.....	Do.
15	Alex. Justice, Battontown, Gloucester County	2	.....	Do.
15	John Quirk, near Harrisonville, Gloucester County	6	.....	Good.
15	Bowman Cheeseman, near Battonville, Gloucester County...	5	.....	Stables, fair; animals, poor.
15	Stacy W. Hazelton, near Harrisonville, Gloucester County...	13	.....	Stables, good; animals, fair.
15	Louis Gerlock, near Harrisonville, Gloucester County	17	.....	Good.
16	John Magins, near Swedesborough, Gloucester County.....	4	.....	Do.
16	Isaac Kessner, Swedesborough, Gloucester County	2	.....	Do.
16	G. Crawford, Swedesborough, Gloucester County.....	8	.....	Do.
16	Nicholas Brennis, Swedesborough, Gloucester County	5	.....	Do.
16	William Helms, Swedesborough, Gloucester County.....	5	.....	Do.
16	Lewis Shock, Swedesborough, Gloucester County.....	1	.....	Do.
16	John Saunders, Swedesborough, Gloucester County.....	1	.....	Do.
16	George Hall, Swedesborough, Gloucester County.....	5	.....	Do.
16	Philip Parker, Swedesborough, Gloucester County	3	.....	Do.
16	Isaac Orr, Swedesborough, Gloucester County	3	.....	Do.
16	Daniel Klose, Swedesborough, Gloucester County	1	.....	Very good.
16	Mrs. C. Strinman, Swedesborough, Gloucester County.....	1	.....	Good.
16	B. E. Slivler, Swedesborough, Gloucester County.....	1	.....	Do.
16	John Wallace, Swedesborough, Gloucester County.....	4	.....	Do.
16	William Rode, Swedesborough, Gloucester County.....	1	.....	Do.
16	S. M. Homan, Swedesborough, Gloucester County.....	25	.....	Do.
16	Joseph Myers, Repaupo, Gloucester County.....	3	.....	Do.
17	Samuel Cox, Repaupo, Gloucester County	3	.....	Do.
17	Samuel Davenport, Repaupo, Gloucester County.....	10	.....	Do.
17	Freeland Hurff, Ridgeport, Gloucester County	1	.....	Do.
17	Oliver Matison, Repaupo, Gloucester County.....	14	.....	Do.
17	Horace Strickland, Repaupo, Gloucester County.....	12	.....	Do.
17	Godloch Hubert, Repaupo, Gloucester County	8	.....	Do.
17	Hans Helms, Repaupo, Gloucester County	2	.....	Do.
17	S. D. Cooper, Repaupo, Gloucester County.....	11	.....	Do.
17	James G. Helms, Repaupo, Gloucester County	5	.....	Do.
17	H. P. Shoemaker, Repaupo, Gloucester County	15	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
June 17	Peter F. Locke, Repaupo, Gloucester County	8	.....	Good.
17	J. C. Helms, Repaupo, Gloucester County	1	.....	Do.
17	John Helms, Repaupo, Gloucester County	9	.....	Fair.
17	James H. Gaunt, Repaupo, Gloucester County	3	.....	
17	Henry Brenneis, Repaupo, Gloucester County	5	.....	Good.
17	William Styles, Repaupo, Gloucester County	1	.....	Poor.
17	Rachael Zane, Repaupo, Gloucester County	1	.....	Good.
17	George H. Wharton, Repaupo, Gloucester County	2	.....	Do.
18	Eli Cheesman, Bridgeport, Gloucester County	6	.....	Do.
18	Alex. Black, Swedesborough, Gloucester County	7	.....	Do.
18	David R. Black, Bridgeport, Gloucester County	5	.....	Do.
18	Matt Merlbiaer, Bridgeport, Gloucester County	3	.....	Do.
18	William B. Leap, Bridgeport, Gloucester County	9	.....	Do.
18	William P. Justice, Bridgeport, Gloucester County	10	.....	Do.
18	John Jones, Bridgeport, Gloucester County	2	.....	Do.
18	C. W. Justice, Bridgeport, Gloucester County	2	.....	Do.
18	Luis Folker, Bridgeport, Gloucester County	6	.....	Fair.
18	Ethen Middleton, Bridgeport, Gloucester County	5	.....	Good.
18	Charles Sharp, Bridgeport, Gloucester County	27	.....	Do.
18	John Kirby, Bridgeport, Gloucester County	5	.....	Do.
18	George S. Sharp, Bridgeport, Gloucester County	5	.....	Do.
18	Manuel Bongreninger, Bridgeport, Gloucester County	2	.....	Fair.
18	William D. Ryan, Bridgeport, Gloucester County	5	.....	Good.
19	Thomas Worrell, Swedesborough, Gloucester County	6	.....	Do.
19	Peter Longacre, Swedesborough, Gloucester County	3	.....	Do.
19	James Horner, Swedesborough, Gloucester County	20	.....	Do.
19	Thomas H. Baden, Swedesborough, Gloucester County	8	.....	Do.
19	A. Wallace, Swedesborough, Gloucester County	2	.....	Do.
19	Samuel Reed, Swedesborough, Gloucester County	2	.....	Do.
19	Thomas McCann, Swedesborough, Gloucester County	2	.....	Do.
19	Thomas Davidson, sr., Swedesborough, Gloucester County	4	.....	Do.
19	William Lawrence, Swedesborough, Gloucester County	2	.....	Do.
19	D. E. Richardson, Swedesborough, Gloucester County	11	.....	Poor.
19	Samuel T. Steward, Swedesborough, Gloucester County	13	.....	Good.
19	Barney Nary, Swedesborough, Gloucester County	2	.....	Poor.
19	Samuel B. Holton, Swedesborough, Gloucester County	4	.....	Stables, fair; animals, good.
19	John Vaags, Swedesborough, Gloucester County	2	.....	Good.
19	Joseph Pidgeon, Swedesborough, Gloucester County	6	.....	Do.
20	E. H. Black, Swedesborough, Gloucester County	31	.....	Do.
20	Israel Black, Swedesborough, Gloucester County	16	.....	Do.
20	Thomas Longacre, Swedesborough, Gloucester County	1	.....	Do.
20	Samuel Moore, Swedesborough, Gloucester County	20	.....	Do.
20	John Robbins, Swedesborough, Gloucester County	19	.....	Do.
20	William Batten, Swedesborough, Gloucester County	14	.....	Do.
20	Charles H Locke, Swedesborough, Gloucester County	6	.....	Do.
20	Rodolphus Black, Swedesborough, Gloucester County	5	.....	Do.
20	Henry Jones, Swedesborough, Gloucester County	8	.....	Do.
20	Mary Rhode, Swedesborough, Gloucester County	11	.....	Do.
20	Lewis Jones, Swedesborough, Gloucester County	1	.....	Do.
	Inspections by J. W. Hawk, V. S.			
June 16	F. Blancke, Linden, Union County	124	.....	Good.
16	W. Terry, Woolgrove, Union County	16	.....	Do.
17	J. Winans, Linden, Union County	23	.....	Do.
17	J. Lyons, Bayonne, Hudson County	35	.....	Do.
17	——— ———, Bayonne, Hudson County	39	.....	Do.
19	Herwitz & Levinthal, Hoboken, Hudson County	41	.....	Stables, fair; animals, good.
19	Mr. Rowdenburg, Hoboken, Hudson County	15	.....	Good.
19	F. E. Elitz, Marion, Hudson County	16	.....	Do.
19	Commons, Marion, Hudson County	36	.....	Do.
20	M. Burgen, Bloomfield, Essex County	15	.....	Do.
20	John Charles, Bloomfield avenue, Essex County	3	.....	Do.
20	John Maxfield, Bloomfield avenue, Essex County	65	.....	Do.
20	James Jackson, Orange, Essex County	13	.....	Do.
22	A. Van Vliet, Linden, Union County	5	.....	Filthy.
22	F. Blanche, Linden, Union County	123	.....	Good.
23	D. Ross, near Linden, Union County	40	.....	Fair.
23	W. Tucker, Linden, Union County	7	.....	Good.
23	M Mulligan, Linden, Union County	10	.....	Do.
24	Mr. Henning, Jersey City Heights, Hudson County	15	.....	Do.
24	S. Koslowsky, Jersey City Heights, Hudson County	5	.....	Stables, filthy; animals, fair.
24	A. Liebermann, near Snake Hill, Hudson County	85	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung plague.	Condition.
	Inspections by J. W. Hawk, V. S.—Continued.			
1885.				
June 25	Commons, Jersey City Heights, Hudson County	25	.....	Stables, filthy; animals, fair.
25	H. Feinberg, Secaucus, Hudson County	83	.....	Do.
27	T. McCandless, Elizabeth, Union County	25	.....	Fair.
27	O. Woodruff, Elizabeth, Union County	26	.....	Good.
27	H. McCandless, Elizabeth, Union County	26	.....	Fair.
27	Mr. Eckert, Elizabeth, Union County	3	.....	Good.
29	Mr. Haulk, Elizabeth, Union County	3	.....	Do.
29	C. Kutze, Elizabeth, Union County	13	.....	Do.
29	H. Fisher, Elizabeth, Union County	3	.....	Do.
29	John Peters, Elizabeth, Union County	3	.....	Do.
29	Mr. Croke, Elizabeth, Union County	3	.....	Do.
29	Commons, Elizabeth, Union County	16	.....	Do.
29	John Littennd, Elizabeth, Union County	30	.....	Do.
29	H. Campbell, Elizabeth, Union County	5	.....	Do.
29	James Devlin, Elizabeth, Union County	5	.....	Do.
29	M. Mahone, Elizabeth, Union County	5	.....	Do.
30	M. Burgen, near Newark, Essex County	20	.....	Do.
30	Mr. Dunn, near Newark, Essex County	16	.....	Do.
30	Mr. Bradden, near Newark, Essex County	6	.....	Do.
30	The old road, near Bloomfield, Essex County	16	.....	Do.
	Inspections by C. K. Dyer, V. S.			
June 22	Samuel Branin, Bridgeport, Gloucester County	18	2	Good.
22	S. Levi Jones, Bridgeport, Gloucester County	7	2	Do.
23	Henry Kirby, Bridgeport, Gloucester County	5	.....	Do.
23	Jos. Risler, Bridgeport, Gloucester County	14	.....	Do.
23	Sallie Brown, Bridgeport, Gloucester County	2	.....	Do.
23	Manuel Gerninger, Bridgeport, Gloucester County	2	.....	Do.
23	James Kirby, Bridgeport, Gloucester County	6	.....	Do.
23	James Hughes, Bridgeport, Gloucester County	2	.....	Do.
23	William Cook, Bridgeport, Gloucester County	1	.....	Do.
23	Jane Grey, Bridgeport, Gloucester County	2	.....	Do.
23	Elwood Eisinger, Bridgeport, Gloucester County	2	.....	Do.
23	Frank Springer, Bridgeport, Gloucester County	2	.....	Do.
23	George Beckett, Bridgeport, Gloucester County	2	.....	Do.
23	Lewis Falger, Bridgeport, Gloucester County	10	.....	Do.
23	Peter Talbert, Bridgeport, Gloucester County	7	.....	Do.
23	Charles Springer, Bridgeport, Gloucester County	13	.....	Do.
23	George Sharp, Bridgeport, Gloucester County	7	.....	Do.
23	Charles Sharp, Bridgeport, Gloucester County	13	.....	Fair.
23	Ann Lawrence, Bridgeport, Gloucester County	3	.....	Good.
24	G. R. Richardson, Bridgeport, Gloucester County	6	.....	Do.
24	Mrs. H. Norton, Bridgeport, Gloucester County	20	.....	Do.
24	Hugh McGleney, Bridgeport, Gloucester County	15	.....	Do.
24	Joseph K. Norton, Bridgeport, Gloucester County	18	.....	Do.
24	Josiah B. Wright, Bridgeport, Gloucester County	1	.....	Do.
24	Samuel Shoulders, Bridgeport, Gloucester County	1	.....	Do.
24	Elizabeth Shoulder, Bridgeport, Gloucester County	40	.....	Do.
24	James Hall, Bridgeport, Gloucester County	11	.....	Do.
24	Joseph G. Davis, Bridgeport, Gloucester County	22	.....	Do.
24	William Homan, Bridgeport, Gloucester County	12	.....	Fair.
24	Charles Shoulders, Bridgeport, Gloucester County	1	.....	Good.
24	Martin Burke, Bridgeport, Gloucester County	5	.....	Do.
24	William Kelly, Bridgeport, Gloucester County	3	.....	Fair.
24	Samuel L. Kills, Bridgeport, Gloucester County	12	.....	Good.
24	Jacob Holcraft, Bridgeport, Gloucester County	61	.....	Do.
24	Eli H. Lawrence, Bridgeport, Gloucester County	14	.....	Do.
24	John Holcraft, Bridgeport, Gloucester County	1	.....	Do.
24	John Mounts, Bridgeport, Gloucester County	2	.....	Do.
24	Benjamin G. English, Bridgeport, Gloucester County	2	.....	Do.
24	John Sholders, Bridgeport, Gloucester County	5	.....	Do.
24	William H. Featherer, Bridgeport, Gloucester County	10	.....	Do.
25	Edmund Dawson, Center Square, Gloucester County	23	.....	Do.
25	Seth Roberts, Center Square, Gloucester County	4	.....	Do.
25	Mrs. D. Kirby, Bridgeport, Gloucester County	3	.....	Do.
25	John Gulegoswhi, Bridgeport, Gloucester County	2	.....	Do.
25	J. R. Kirby, Bridgeport, Gloucester County	3	.....	Do.
25	Aaron Hughes, Bridgeport, Gloucester County	2	.....	Do.
25	Richard Burke, Bridgeport, Gloucester County	6	.....	Do.
25	Hugh Sharp, Bridgeport, Gloucester County	12	.....	Do.
25	Martin Tag, Bridgeport, Gloucester County	2	.....	Do.
25	Matthew Kelly, Bridgeport, Gloucester County	7	.....	Do.
25	William K. West, Centre Square, Gloucester County	5	.....	Do.
25	John Lumus, Bridgeport, Gloucester County	2	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition
	Inspections by C. K. Dyer, V. S.—Continued.			
1885.				
June 25	Benjamin Shoemaker, Bridgeport, Gloucester County	2	.....	Good.
25	Henry Walters, Bridgeport, Gloucester County	4	.....	Do.
25	William Featherer, Bridgeport, Gloucester County	4	.....	Do.
25	Frank Davenport, Bridgeport, Gloucester County	6	.....	Do.
25	William Hughes, Bridgeport, Gloucester County	6	.....	Do.
25	Robert Burke, Bridgeport, Gloucester County	3	.....	Do.
25	A. Wooly, Bridgeport, Gloucester County	2	.....	Do.
	Inspections by Miller & Dyer, V. S.			
June 26	T. C. Myers, Centre Square, Gloucester County	7	.....	Good.
26	Jacob Zane, Centre Square, Gloucester County	1	.....	Do.
26	Benjamin Morton, Centre Square, Gloucester County	21	.....	Do.
26	William D. Morton, Centre Square, Gloucester County	8	.....	Do.
26	Albert Roseñer, Centre Square, Gloucester County	7	.....	Do.
26	Robert Holcraft, Centre Square, Gloucester County	6	.....	Do.
26	John Shultz, Centre Square, Gloucester County	4	.....	Do.
26	Charles Hampton, Centre Square, Gloucester County	9	.....	Do.
26	Carman Richardson, Centre Square, Gloucester County	7	.....	Do.
26	Amos Block, Centre Square, Gloucester County	23	.....	Do.
26	Frank Dawson, Centre Square, Gloucester County	5	.....	Do.
26	Benjamin H. Block, Centre Square, Gloucester County	6	.....	Do.
26	William H. Springer, Centre Square, Gloucester County	24	.....	Stables, good; animals, fair.
26	Charles Davenport, Centre Square, Gloucester County	5	.....	Good.
26	John Everline, Centre Square, Gloucester County	7	.....	Do.
26	James West, Centre Square, Gloucester County	5	.....	Do.
26	Issac Patterson, Centre Square, Gloucester County	3	.....	Do.
26	Elijah Rulon, Centre Square, Gloucester County	2	.....	Do.
26	W. H. Backett, Centre Square, Gloucester County	5	.....	Do.
26	Henry Hurff, Centre Square, Gloucester County	5	.....	Do.
26	Benjamin Weatherby, sr., Centre Square, Gloucester County	13	.....	Do.
26	Benjamin Weatherby, jr., Centre Square, Gloucester County	8	.....	Do.
26	Joseph Backett, Centre Square, Gloucester County	25	.....	Do.
26	John W. Du Bois, Centre Square, Gloucester County	5	.....	Do.
26	Amos Hurff, Centre Square, Gloucester County	11	.....	Do.
26	James Morrison, Centre Square, Gloucester County	6	.....	Do.
27	William C. Unichman, Centre Square, Gloucester County	5	.....	Do.
27	J. E. Hendruckson, Glenwood, Gloucester County	4	.....	Do.
27	Stokes Sullivan, Glenwood, Gloucester County	8	.....	Do.
27	James Flynn, Glenwood, Gloucester County	3	.....	Do.
27	Alfred Ward, Glenwood, Gloucester County	4	.....	Do.
27	John Stay, Glenwood, Gloucester County	5	.....	Do.
27	Aaron Stay, Glenwood, Gloucester County	6	.....	Do.
27	Edward Willis, Glenwood, Gloucester County	4	.....	Do.
29	Samuel N. Rhoades, near Mount Ephraim, Camden County	42	.....	Do.
29	M. Fennfer, Pavonia, Camden County	7	1	Do.
30	John Norton, near Milford, Monmouth County	18	.....	Do.
30	John V. Ely, near Milford, Monmouth County	20	.....	Do.
July 1	James English, near South Amboy, Middlesex County	4	.....	Do.
1	E. F. Roberts, near South Amboy, Middlesex County	11	.....	Stables, good; animals, fair.
2	Caleb Ridgway, Vincentown, Burlington County	31	.....	Good.
3	John McIntyre, near Franklinville, Gloucester County	23	.....	Do.
3	C. Haslett, near Franklinville, Gloucester County	9	.....	Do.
3	John McIntyre, near Franklinville, Gloucester County	23	.....	Do.
3	William Rosenberger, nr. Franklinville, Gloucester County	12	.....	Do.
3	B. Smith, near Franklinville, Gloucester County	19	.....	Do.
3	William Smith, near Franklinville, Gloucester County	28	.....	Do.
3	William Cox, near Swedesborough, Gloucester County	8	.....	Do.
3	S. Mayhew, near Swedesborough, Gloucester County	4	.....	Do.
3	I. Mayhew, near Swedesborough, Gloucester County	6	.....	Do.
3	J. B. Moore, near Swedesborough, Gloucester County	4	.....	Do.
4	S. Levi Jones, Lumberton, Burlington County	6	1	Do.
4	Samuel Braim, Medford, Burlington County	16	.....	Do.
	Inspections by J. W. Hawk, V. S.			
July 1	The road, Roseland, Essex County	18	.....	Animals, good.
1	Frank Dodd, Roseland, Essex County	8	.....	Good.
1	F. Carroll, Roseland, Essex County	12	.....	Do.
2	J. McCall, Bloomfield, Essex County	8	.....	Do.
2	Mike Noel, Bloomfield, Essex County	12	.....	Do.
2	John Carroll, near Bloomfield, Essex County	8	.....	Do.
2	John Caller, Newark, Essex County	20	.....	Do.
2	J. Wissner, Newark, Essex County	15	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by J. W. Hawk, V. S.—Continued.			
1885.				
July 2	L. Blatge, Newark, Essex County	8	.....	Good.
2	B. Aickers, Newark, Essex County	8	.....	Do.
3	Commons, Newark, Essex County	2	.....	Do.
6	T. M. Williams, Orange, Essex County	30	.....	Stables, poor animals, fair.
6	John McLaughlin, Orange, Essex County	18	.....	Good.
6	L. Mason, South Orange, Essex County	9	.....	Do.
6	Finnagan & Thomas, South Orange, Essex County	20	.....	Do.
6	B. Belelson, South Orange, Essex County	10	.....	Do.
	Inspections by Rowland & Hawk, V. S.			
July 6	James Bond, Irvington, Essex County	14	.....	Good.
6	H. Hand, Irvington, Essex County	12	.....	Do.
6	Fred. Yager, near Waverly, Essex County	14	.....	Do.
6	J. Marcells, near Waverly, Essex County	41	.....	Do.
6	M. Jager, near Irvington, Essex County	28	.....	Do.
7	J. Wizer, Irvington, Essex County	14	.....	Do.
7	Fred. Kames, near Irvington, Essex County	45	.....	Do.
7	Charles Wizer, near Irvington, Essex County	27	.....	Do.
9	John Conley, near Springfield, Essex County	10	.....	Do.
9	John Hadden, near Springfield, Essex County	35	.....	Do.
9	Richard Headley, near Springfield, Essex County	18	.....	Do.
9	Benjamin Riley, near Springfield, Essex County	5	1	Do.
10	William Sari, near Linden, Union County	18	.....	Do.
10	Charles Brown, near Linden, Union County	29	.....	Do.
10	Fred. Blank, nearLinden, Union County	109	1	Do.
11	Kafus Cronce, near Roselle, Union County	30	.....	Do.
11	David McGee, near Roselle, Union County	10	.....	Do.
11	Mrs. M. Star, near Roselle, Union County	8	.....	Do.
11	John Kane, near Roselle, Union County	15	.....	Do.
11	Eliza B. Jagers, near Roselle, Union County	45	.....	Do.
11	Richard Chapman, near Roselle, Union County	30	.....	Do.
13	M. Harrison, near Orange, Essex County	28	.....	Do.
13	Dewitt Baldwin, near Orange, Essex County	30	.....	Do.
13	John Lamb, near Orange, Essex County	19	.....	Do.
13	Martin Clab, near Orange, Essex County	8	.....	Do.
13	M. Younge, near Orange, Essex County	50	.....	Do.
	Inspections by Miller & Dyer, V. S.			
July 6	Paul Dehner, Pitman Grove, Gloucester County	3	.....	Good.
6	B. F. Densten, Pitman Grove, Gloucester County	4	.....	Do.
6	Robert Locke, Pittman Grove, Gloucester County	2	.....	Fair.
6	Thomas Reeve, Pitman Grove, Gloucester County	1	.....	
6	Henry Dunlap, Glassborough, Gloucester County	2	.....	Good.
6	Westley Brown, Glassborough, Gloucester County	9	.....	Do.
6	Oliver Zane, Glassborough Gloucester County	7	.....	Stables, good; animals, fair.
6	John P. Whitney, Glassborough, Gloucester County	28	.....	Good.
6	John P. Whitbury, Glassborough, Gloucester County	14	.....	Do.
7	Catharine Stoll, Glassborough, Gloucester County	1	.....	Do.
7	George Shields, Glassborough, Gloucester County	1	.....	Do.
7	Terrence Wood, Glassborough, Gloucester County	1	.....	
7	Ellis Pawlin, Glassborough, Gloucester County	3	.....	Do.
7	Joseph S. Pawlin, Glassborough, Gloucester County	6	.....	Do.
7	Edward Lamb, Glassborough, Gloucester County	2	.....	Do.
7	Joseph Craft, near Glassborough, Gloucester County	6	.....	Stables, good; animals, fair.
7	William Kirk Patrick, Glassborough, Gloucester County	3	.....	Good.
7	R. W. Carnell, near Glassborough, Gloucester County	4	.....	Fair.
7	J. H. Carwell, near Glassborough, Gloucester County	1	.....	Good.
7	William Locke, Glassborough, Gloucester County	7	.....	Do.
8	Alfred Pedrick, Glassborough, Gloucester County	1	.....	Do.
8	John Becket, Glassborough, Gloucester County	1	.....	Do.
8	Josiah Becket, Glassborough, Gloucester County	1	.....	Do.
8	John T. Sickler, Glassborough, Gloucester County	2	.....	Do.
8	Jesse E. Reeves, Glassborough, Gloucester County	1	.....	Do.
8	Ely Braddock, Glassborough, Gloucester County	1	.....	Do.
8	John Shute, Glassborough, Gloucester County	1	.....	Do.
8	Ira Iszard, Glassborough, Gloucester County	4	.....	Stables, good; animals, fair.
8	Jacob Stauger, Glassborough, Gloucester County	1	.....	Good.
8	William Watson, near Glassborough, Gloucester County	3	.....	Do.
8	John Repp, Glasborough, Gloucester County	10	.....	Do.
8	William Disherst, Glassborough, Gloucester County	8	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plagne.	Condition
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
July 8	Thomas McGee, Glassborough, Gloucester County	6	.....	Stables, good; animals, fair.
9	Philip Mason, Woodbury, Gloucester County	8	.....	Good.
9	Charles Jones, Woodbury, Gloucester County	1	.....	Do.
9	Aden Muller, Woodbury, Gloucester County	11	.....	Do.
9	Richard Batten, Woodbury, Gloucester County	1	.....	Do.
9	Jonas Cotell, Woodbury, Gloucester County	4	.....	Do.
9	Joseph E. Clark, Woodbury, Gloucester County	7	.....	Do.
9	J. Comley Gibson, Woodbury, Gloucester County	2	.....	Do.
9	Charles Pearson, Woodbury, Gloucester County	2	.....	
9	Harry Lardner, Woodbury, Gloucester County	1	.....	Do.
9	George D. Lee, Woodbury, Gloucester County	7	.....	Do.
9	Louis Lardner, Woodbury, Gloucester County	4	.....	Do.
9	Robert Morgan, Woodbury, Gloucester County	4	.....	Do.
9	Joseph Carson, Woodbury, Gloucester County	11	.....	Do.
10	James Griscom, Woodbury, Gloucester County	7	.....	Do.
10	Fred. Steinbach, Fairview, Gloucester County	1	.....	Stables, fair; animals, poor.
10	Fred. Wood, Fairview, Gloucester County	1	.....	
10	Andrew Williams, Fairview, Gloucester County	3	.....	Good.
10	Sarah Clark, Fairview, Gloucester County	4	.....	Do.
10	Winfield Sharp, Fairview, Gloucester County	2	.....	Do.
10	Edw. Scott, Fairview, Gloucester County	10	.....	Do.
10	Ellison Leap, Fairview, Gloucester County	9	.....	Do.
10	Cooper Morgan, Blackwoodtown, Camden County	3	.....	Do.
10	Samuel Boody, Blackwoodtown, Camden County	1	.....	
10	James Pine, Blackwoodtown, Camden County	2	.....	Do.
10	Richard Stevenson, Blackwoodtown, Camden County	2	.....	Do.
10	Samuel Gilbert, Blackwoodtown, Camden County	2	.....	Do.
10	Amos Davinson, Blackwoodtown, Camden County	1	.....	Do.
10	Thomas J. Wentz, Blackwoodtown, Camden County	2	.....	Do.
10	Cooper Rulong, Blackwoodtown, Camden County	1	.....	
10	Josiah Wood, Blackwoodtown, Camden County	1	.....	
10	Jos. Wood, Blackwoodtown, Camden County	1	.....	
11	Rev. Mr. Brace, Blackwoodtown, Camden County	1	.....	
11	Daniel Bakleys, Blackwoodtown, Camden County	1	.....	
11	Charles Clark, Blackwoodtown, Camden County	1	.....	
11	Theodore Heider, Blackwoodtown, Camden County	1	.....	
11	Dr. H. Branin, Blackwoodtown, Camden County	1	.....	
11	Jonas Livermore, Blackwoodtown, Camden County	1	.....	
11	Pittman Willcox, Blackwoodtown, Camden County	2	.....	Do.
11	James Tweed, Blackwoodtown, Camden County	9	.....	Do.
11	Jos. A. Leap, Blackwoodtown, Camden County	1	.....	
11	George C. Eldrich, Blackwoodtown, Camden County	13	.....	Do.
11	Henry Morgan, Blackwoodtown, Camden County	9	.....	Do.
11	Harry Adams, Blackwoodtown, Camden County	2	.....	Do.
11	George W. Porch, Blackwoodtown, Camden County	22	.....	Do.
	Inspections by J. W. Hawk, V. S.			
July 14	Depot, Newark, Essex County	28	.....	Do.
14	Mrs. Piefer, Newark, Essex County	22	.....	Do.
14	B. Sturner, Newark, Essex County	35	.....	Stables, fair; animals, good.
16	John Riley, Belleville, Essex County	15	.....	Good.
16	Commons, Belleville, Essex County	10	.....	Do.
16	Mr. Gilman, Belleville, Essex County	6	.....	Do.
16	James Manley, Belleville, Essex County	15	.....	Do.
16	M. Bilman, Belleville, Essex County	2	.....	Do.
17	J. Martin, Belleville, Essex, County	23	.....	Do.
17	Mr. Ryan, Belleville, Essex County	2	.....	Do.
17	Mr. Blair, Belleville, Essex County	10	.....	Do.
17	Commons, Belleville, Essex County	15	.....	Do.
18	A. Felix, West New York, Hudson County	9	.....	Stables, filthy; animals, poor.
18	Mr. Kinley, West New York, Hudson County	10	.....	Good.
18	Mr. Fisher, West New York, Hudson County	10	.....	Do.
18	John Merton, West New York, Hudson County	20	.....	Do.
20	W. S. Riley, near Springfield, Union County	18	.....	Do.
20	George Easbeck, near Elizabeth, Union County	35	.....	Do.
20	J. A. Barritt, near Elizabeth, Union County	22	.....	Do.
20	W. E. Headley, near Hilton, Union County	15	.....	Do.
20	M. Brett, near Elizabeth, Union County	15	.....	Do.
20	W. Blossom, near Elizabeth, Union County	7	.....	Do.
21	J. T. Tierce, near Irvington, Union County	30	.....	Do.
21	Mrs. Mary Hoyt, near Irvington, Union County	25	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by J. W. Hawk, V, S.—Continued.			
1885.				
July 21	W. E. Day, near Hilton, Union County	25	.....	Good.
21	M. Drake, near Hilton, Essex County	36	.....	Do.
	Inspections by Rowland & Hawk, V. S.			
July 23	M. Haviland, near Rahway, Union County	25	.....	Do.
23	M. Forbes, near Rahway, Union County	18	.....	Do.
23	C. Bloomfield, Uniontown, Middlesex County	14	.....	Do.
23	C. Runyan, Islin, Middlesex County	6	.....	Do.
23	F. Cooper, near Menlo Park, Middlesex County	7	.....	Do.
23	M. Currier, near Menlo Park, Middlesex County	20	.....	Do.
24	F. Thornal, Menlo Park, Middlesex County	5	.....	Do.
24	I. Thornal, Menlo Park, Middlesex County	12	.....	Do.
24	J. S. Smith, Middlesex County	14	.....	Do.
24	M. Woodard, Middlesex County	3	.....	Do.
24	M. Gueer, near Stelton, Middlesex County	25	.....	Do.
24	S. Hill, near Stelton, Middlesex County	10	.....	Do.
25	The road, near New Brunswick, Middlesex County	20	.....	Do.
25	Joseph Barton, near Stelton, Middlesex County	20	.....	Do.
25	The road, near Stelton, Middlesex County	20	.....	Do.
25	W. Stell, near Stelton, Middlesex County	12	.....	Do.
25	D. Runyon, near Stelton, Middlesex County	20	.....	Do.
25	Samuel Runyon, near New Brunswick, Middlesex County	18	.....	Do.
25	E. Smith, Middlesex County	15	.....	Do.
27	S. P. Napp, Middlesex County	26	.....	Do.
27	George Miller, Middlesex County	58	.....	Do.
27	E. H. Wilson, Middlesex County	6	.....	Do.
27	John Keif, Middlesex County	14	.....	Do.
27	M. McDunn, Middlesex County	15	.....	Do.
28	M. E. Stell, Middlesex County	18	.....	Do.
28	S. S. Van Angle, near Voorhees Station, Middlesex County	9	.....	Do.
28	A. Van Mule, near New Brunswick, Middlesex County	18	.....	Do.
28	C. B. Ransome, near New Brunswick, Middlesex County	48	.....	Do.
29	Mrs. M. Jacobus, near New Brunswick, Middlesex County	18	.....	Do.
29	James Smalley, near New Brunswick, Middlesex County	23	.....	Not Good.
29	Edward Lucus, Clide, Middlesex County	10	.....	Good.
29	Webb Schanch, near Clide, Middlesex County	22	.....	Do.
29	Joseph Christopher, near Clide, Middlesex County	15	.....	Do.
29	John Spilling, near Clide, Middlesex County	12	.....	Do.
29	Leonard Lultz, near New Brunswick, Middlesex County	7	.....	Do.
30	J. White, near Bound Creek, Middlesex County	27	.....	Do.
30	M. Swazy, near Bound Creek, Middlesex County	20	.....	Do.
30	Ned Dinsmouth, near Bound Creek, Middlesex County	35	.....	Do.
30	"Unknown," near Bound Creek, Middlesex County	1	.....	
30	W. Nevis, near Bound Creek, Middlesex County	3	.....	Do.
30	M. Smock, near Bound Creek, Middlesex County	.....	.....	Do.
30	John Cummungis, near New Market, Middlesex County	4	.....	Do.
30	Captain Bliss, near Bound Creek, Middlesex County	10	.....	Do.
30	J. Morris, near Bound Creek, Middlesex County	20	.....	Do.
30	M. Hoe, near Bound Creek, Middlesex County	80	.....	Do.
30	Abraham Kilpatrick, near New Brunswick, Middlesex Co.	20	.....	Do.
30	George Gilbert, near New Market, Middlesex County	25	.....	Do.
				Do.
	Inspections by Miller & Dyer, V. S.			
July 13	Albert Williams, Cross Keys, Gloucester County	4	.....	Good.
13	Robert Turner, Cross Keys, Gloucester County	7	.....	Do.
13	Alfred H. Williams, Cross Keys, Gloucester County	4	.....	Do.
13	John Ervin, Cross Keys, Gloucester County	5	.....	Do.
13	John W. Chew, Cross Keys, Gloucester County	11	.....	Do.
13	Samuel Sharp, Cross Keys, Gloucester County	9	.....	Do.
13	John S. Wilmot, Cross Keys, Gloucester County	1	.....	Do.
13	E. Scott, Cross Keys, Gloucester County	7	.....	Do.
13	Charles Stephenson, Cross Keys, Gloucester County	1	.....	Do.
13	Aquilla Williams, Cross Keys, Gloucester County	4	.....	Do.
13	Elmer Cuvois, Cross Keys, Gloucester County	6	.....	Do.
13	George W. Williams, Cross Keyes, Gloucester County	4	.....	Do.
13	William Garigus, Cross Keyes, Gloucester County	1	.....	Do.
13	James Collins, Cross Keyes, Gloucester County	5	.....	Do.
13	Isaac Champion, Cross Keyes, Gloucester County	3	.....	Do.
14	Aug. Trouncer, Hurffville, Gloucester County	1	.....	Do.
14	William S. Kerns, Hurffville, Gloucester County	3	.....	Do.
14	Thomas W. Hurff, Hurffville, Gloucester County	11	.....	Do.
14	Samuel J. Evans, Hurffville, Gloucester County	13	.....	Do.
14	Mrs. Allen, Hurffville, Gloucester County	6	.....	Do.
14	William Shelts, Turnersville, Gloucester County	1	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
July 14	John Wheeler, Turnersville, Gloucester County	2	.....	Good.
14	Aug. Wilson, Turnersville, Gloucester County	2	.....	Do.
14	Jesse Turner, Turnersville, Gloucester County	1	.....	Do.
14	Lumus Stewart, Turnersville, Gloucester County	1	.....	Do.
14	Mr. Grotsee, Turnersville, Gloucester County	1	.....	Do.
14	Jos. Proser, Turnersville, Gloucester County	1	.....	Do.
14	Charles Wilsey, Turnersville, Gloucester County	1	.....	Do.
14	George Weatherby, Turnersville, Gloucester County	1	.....	Do.
15	Thomas Cunningham, Glassborough, Gloucester County	1	.....	Do.
15	Dr. Izzard, Glassborough, Gloucester County	1	.....	Do.
15	Sol. Slanger, Glassborough, Gloucester County	1	.....	Do.
15	David Gifford, Glassborough, Gloucester County	3	.....	Do.
15	Mrs. Storm, Glassborough, Gloucester County	1	.....	Do.
15	N. Turner, Glassborough, Gloucester County	1	.....	Do.
15	W. Warrick, Glassborough, Gloucester County	3	.....	Do.
15	John Parker, Glassborough, Gloucester County	1	.....	Do.
15	Dan. Wallace, Glassborough, Gloucester County	1	.....	Do.
15	James Hate, Glassborough, Gloucester County	1	.....	Do.
15	Samuel Van Hess, Glassborough, Gloucester County	1	.....	Do.
15	James Bowe, Glassborough, Gloucester County	1	.....	Do.
15	Samuel Carter, Glassborough, Gloucester County	1	.....	Do.
15	John Young, Glassborough, Gloucester County	4	.....	Do.
15	Andrew Dilts, Hurffville, Gloucester County	2	.....	Do.
15	Benjamin F. Allen, Hurffville, Gloucester County	2	.....	Do.
15	Charles Jones, Hurffville, Gloucester County	11	.....	Do.
15	Amanda Allen, Hurffville, Gloucester County	1	.....	Do.
15	Brooks Hurf, Hurffville, Gloucester County	5	.....	Do.
16	Frank Anderson, Cross Keyes, Gloucester County	1	.....	Do.
16	R. Watson, Cross Keyes, Gloucester County	1	.....	Do.
16	B. Hewitt, Cross Keyes, Gloucester County	6	.....	Do.
16	Jos. Carvin, Cross Keyes, Gloucester County	6	.....	Do.
16	William Thompson, Cross Keyes, Gloucester County	2	.....	Do.
16	Thomas Campbell, Cross Keyes, Gloucester County	8	.....	Do.
16	George Fizzler, Cross Keyes, Gloucester County	1	.....	Do.
16	David Rown, Cross Keyes, Gloucester County	3	.....	Do.
16	David Bates, Cross Keyes, Gloucester County	1	.....	Do.
16	Isaac Smith, Cross Keyes, Gloucester County	4	.....	Do.
17	Richard Evans, Cross Keyes, Gloucester County	1	.....	Do.
17	Jacob Borough, Cross Keyes, Gloucester County	1	.....	Do.
17	Charles Lewis, Cross Keyes, Gloucester County	5	.....	Do.
17	Jacob Harker, Cross Keyes, Gloucester County	5	.....	Do.
17	Harry Lawson, Cross Keyes, Gloucester County	1	.....	Do.
17	John Bruner, Cross Keyes, Gloucester County	7	.....	Do.
17	William Bateley, Cross Keyes, Gloucester County	3	.....	Do.
17	Ed. Champion, Cross Keyes, Gloucester County	1	.....	Do.
17	Eli Gauntt, Cross Keyes, Gloucester County	5	.....	Do.
17	Jesse Foster, Cross Keyes, Gloucester County	6	.....	Do.
17	Abe Kindall, Cross Keyes, Gloucester County	6	.....	Do.
18	Robert Gamble, Cross Keyes, Gloucester County	4	.....	Do.
18	William Collins, Cross Keyes, Gloucester County	4	.....	Do.
18	Richard Gauntt, Cross Keyes, Gloucester County	3	.....	Do.
18	Samuel Goskill, Cross Keyes, Gloucester County	1	.....	Do.
18	James Stone, Cross Keyes, Gloucester County	1	.....	Do.
18	Richard Evans, jr., Cross Keyes, Gloucester County	4	.....	Do.
18	Bert Collins, Cross Keyes, Gloucester County	5	.....	Do.
18	Charles Collins, Cross Keyes, Gloucester County	5	.....	Do.
18	Macaja Sharp, Cross Keyes, Gloucester County	1	.....	Do.
18	Charles Sheldon, jr., Cross Keyes, Gloucester County	3	.....	Do.
18	Charles Sheldon, sr., Cross Keyes, Gloucester County	4	.....	Do.
18	Thomas Scott, Cross Keyes, Gloucester County	9	.....	Do.
18	John Murphy, Cross Keyes, Gloucester County	4	.....	Do.
18	Jos. McDaniel, Cross Keyes, Gloucester County	9	.....	Do.
18	Adam Peas, Cross Keyes, Gloucester County	1	.....	Do.
18	Robert M. Pell, Cross Keyes, Gloucester County	6	.....	Do.
18	Cornelius Shone, Cross Keyes, Gloucester County	1	.....	Do.
18	Hugh Grover, Cross Keyes, Gloucester County	2	.....	Do.
20	George Young, Freeze's Mill, Gloucester County	5	.....	Do.
20	Jos. Hampton, Freeze's Mill, Gloucester County	1	.....	Do.
20	Charles Tarner, Freeze's Mill, Gloucester County	3	.....	Do.
20	Samuel Craig, Freeze's Mill, Gloucester County	3	.....	Do.
20	Samuel Gauntt, Freeze's Mill, Gloucester County	4	.....	Do.
20	George Goodenough, Freeze's Mill, Gloucester County	4	.....	Do.
20	William Young, Freeze's Mill, Gloucester County	9	.....	Do.
20	Charles Nicholson, Glassborough, Gloucester County	11	.....	Do.
20	Jos. Hampton, Glassborough, Gloucester County	2	.....	Do.
20	George Young, jr., Glassborough, Gloucester County	5	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
July 20	Benjamin Bishop, Glassborough, Gloucester County	6	.....	Good.
20	Levi E. Locke, Glassborough, Gloucester County	4	.....	Stables, good; animals, fair.
20	M. L. Briscol, Glassborough, Gloucester County	2	.....	Good.
21	Jacob Kirby, Glassborough, Gloucester County	16	.....	Do.
21	M. T. Clark, Glassborough, Gloucester County	2	.....	Do.
21	Charles Shute, Glassborough, Gloucester County	2	.....	Do.
21	M. Blackwell, Glassborough, Gloucester County	6	.....	Do.
21	Robert Folwell, Glassborough, Gloucester County	12	.....	Do.
21	Uriah Ewan, Glassborough, Gloucester County	1	.....	Do.
21	Jim Peterson, Glassborough, Gloucester County	1	.....	Fair.
21	William Ardle, Glassborough, Gloucester County	1	.....	Good.
21	James Bryant, Glassborough, Gloucester County	2	.....	Do.
21	John Gleason, Glassborough, Gloucester County	1	.....	Do.
21	Amos Lloyd, Glassborough, Gloucester County	1	.....	Do.
21	Henry Lippincott, Glassborough, Gloucester County	1	.....	Do.
21	Frank Lloyd, Glassborough, Gloucester County	3	.....	Do.
21	Nathan P. Stratton, Glassborough, Gloucester County	1	.....	Do.
21	Ed. Stratton, Glassborough, Gloucester County	5	.....	Do.
21	Stacy Pancoast, Glassborough, Gloucester County	2	.....	Do.
21	Jos. M. Monroe, Glassborough, Gloucester County	1	.....	Do.
21	Rich. M. Ware, Glassborough, Gloucester County	1	.....	Do.
22	J. M. Gaunt, Five Points, Gloucester County	6	.....	Do.
22	Quincy Sherman, Five Points, Gloucester County	15	.....	Do.
22	Charles Jenkins, Five Points, Gloucester County	2	.....	Do.
22	Thomas Ballinger, Five Points, Gloucester County	10	.....	Do.
22	Chris. Timison, Five Points, Gloucester County	11	.....	Do.
22	Isaac S. Bolton, Five Points, Gloucester County	4	.....	Do.
22	Eli Herritage, Glassborough, Gloucester County	6	.....	Do.
22	William Herritage, Glassborough, Gloucester County	3	.....	Do.
22	A. S. Herritage, Glassborough, Gloucester County	.....	.....	Do.
22	Jos. Nicholson, Glassborough, Gloucester County	4	.....	Poor.
22	James De Wall, Glassborough, Gloucester County	2	.....	Good.
22	Mastien Morin, Glassborough, Gloucester County	2	.....	Do.
22	William W. Mooney, Glassborough, Gloucester County	3	.....	Do.
22	Fred. Berger, Glassborough, Gloucester County	4	.....	Do.
23	Robert Crawford, Mullica Hill, Gloucester County	2	.....	Do.
23	Asbury Carr, Mullica Hill, Gloucester County	1	.....	Do.
23	John Branen, Mullica Hill, Gloucester County	2	.....	Do.
23	John Tozer, Mullica Hill, Gloucester County	1	.....	Do.
23	Ellis French, Mullica Hill, Gloucester County	1	.....	Do.
23	Thomas French, Mullica Hill, Gloucester County	1	.....	Do.
23	A. S. Clark, Mullica Hill, Gloucester County	2	.....	Do.
23	James Sherwin, Mullica, Gloucester County	8	.....	Do.
23	Daniel Wetherby, Five Points, Gloucester County	5	.....	Do.
23	John Mitten, Five Points, Gloucester County	6	.....	Do.
23	J. Murphy, Five Points, Gloucestor County	4	.....	Do.
23	Nancy Warrick, Five Points, Gloucester County	4	.....	Do.
23	Elisha Herritage, Five Points, Gloucester County	1	.....	Do.
23	R. B. Souder, Five Points, Gloucester County	3	.....	Do.
23	Jacob S. Skinner, Five Points, Gloucester County	6	.....	Do.
23	C. C. Louder, Five Points, Gloucester County	6	.....	Do.
23	Samuel A. Estlack, Five Points, Gloucester County	20	.....	Do.
23	Zeb. Garwood, Five Points, Gloucester County	9	.....	Do.
24	Samuel Kies, Ewan's Mills, Gloucester County	5	.....	Do.
24	Henry Hampton, Ewan's Mills, Gloucester County	4	.....	Fair.
24	David Nutt, Ewan's Mills, Gloucester County	2	.....	Good.
24	J. Duffield, Ewan's Mills, Gloucester County	2	.....	Do.
24	Simon Duffield, Ewan's Mills, Gloucester County	2	.....	Do.
24	Robert Montgomery, Ewan's Mills, Gloucester County	1	.....	Do.
24	Albert Stanger, Ewan's Mills, Gloucester County	1	.....	Do.
24	Thomas Langley, Ewan's Mills, Gloucester County	5	.....	Do.
24	John Kugler, Ewan's Mills, Gloucester County	5	.....	Do.
24	William Ellis, Ewan's Mills, Gloucester County	15	.....	Do.
24	James Boyd, Ewan's Mills, Gloucester County	9	.....	Do.
24	B. Styles, Ewan's Mills, Gloucester County	2	.....	Do.
24	Thomas Hann, Ewan's Mills, Gloucester County	1	.....	Do.
24	Jos. Hann, Ewan's Mills, Gloucester County	1	.....	Do.
24	William Smith, Ewan's Mills, Gloucester County	2	.....	Do.
24	John Gruff, Ewan's Mills, Gloucester County	1	.....	Do.
24	John Misner, Ewan's Mills, Gloucester County	1	.....	Do.
24	B. Sharp, Ewan's Mills, Gloucester County	2	.....	Do.
24	Daniel Tark, Ewan's Mills, Gloucester County	1	.....	Do.
24	John Withman, Ewan's Mills, Gloucester County	1	.....	Do.
25	William Howie, Glassborough, Gloucester County	13	.....	Do.
25	John Hazelton, Glassborough, Gloucester County	4	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
July 25	C. A. Hazelton, Glassborough, Gloucester County	5	.....	Good.
25	John Steward, Glassborough, Gloucester County	14	.....	Do.
25	Albert Gardner, Glassborough, Gloucester County	6	.....	Do.
25	George Cole, Glassborough, Gloucester County	10	.....	Do.
25	M. Ryan, Glassborough, Gloucester County	2	.....	Do.
25	Isaac White, Glassborough, Gloucester County	7	.....	Do.
25	Bill Leonard, Glassborough, Gloucester County	8	.....	Do.
25	Jos. Fulton, Glassborough, Gloucester County	2	.....	Do.
25	Benjamin Butcher, Glassborough, Gloucester County	1	.....	Do.
27	Mr Weaver, Barnsborough, Gloucester County	1	.....	Do.
27	Thomas Bee, Barnsborough, Gloucester County	8	.....	Do.
27	Samuel Chew, Barnsborough, Gloucester County	1	.....	Do.
27	Thomas Savage, Barnsborough, Gloucester County	2	.....	Do.
27	Charles Bee, Barnsborough, Gloucester County	1	.....	Do.
27	Thomas Kirkbride, Barnsborough, Gloucester County	9	.....	Do.
27	Charles Turner, Barnsborough, Gloucester County	5	.....	Do.
27	Isaac W. Griscomb, Hurffville, Gloucester County	3	.....	Do.
27	Joshua H. Dilks, Hurffville, Gloucester County	2	.....	Do.
27	Samuel Wentz, Hurffville Gloucester County	5	.....	Do.
27	Cooper Cattell, Hurffville, Gloucester County	6	.....	Do.
27	William S. Cattell, Hurffville, Gloucester County	12	.....	Do.
27	Albert Sweeten, Hurffville, Gloucester County	7	.....	Do.
27	Arthur Jennings, Hurffville, Gloucester County	1	.....	Do.
27	Ed. Neuschafer, Hurffville, Gloucester County	2	.....	Do.
27	George Dilks, Hurffville, Gloucester County	3	.....	Do.
27	John Lyons, Hurffville, Gloucester County	8	.....	Do.
28	H. G. Hendrickson, Hurffville, Gloucester County	14	.....	Do.
28	William Smith, Hurffville, Gloucester County	15	.....	Do.
28	Isaac Turner, Hurffville, Gloucester County	1	.....	Do.
28	R. M. Stevenson, Hurffville, Gloucester County	1	.....	Do.
28	William B. Stevenson, Hurffville, Gloucester County	12	.....	Do.
28	Howard Garrison, Hurffville, Gloucester County	2	.....	Do.
28	Albert Hurf, Hurffville, Gloucester County	1	.....	Do.
28	S. O. Prickett, Hurffville, Gloucester County	2	.....	Do.
28	George W. Grier, Hurffville, Gloucester County	1	.....	Do.
28	Jos. S. Cattell, Hurffville, Gloucester County	8	.....	Do.
28	J. Murphy, Hurffville, Gloucester County	4	.....	Do.
28	J. R. Downs, Hurffville, Gloucester County	2	.....	Do.
28	Samuel Ridgway, Five Points, Gloucester County	2	.....	Do.
29	Albie Hurf, Barnsborough, Gloucester County	2	.....	Do.
29	William Carter, Barnsborough, Gloucester County	1	.....	Do.
29	Job. Ballinger, Pittman, Gloucester County	1	.....	Do.
29	Robert Shoemaker, Glassborough, Gloucester County	7	.....	Do.
29	Leonard Chew, Barnsborough, Gloucester County	9	.....	Do.
29	George C. Allen, Barnsborough, Gloucester County	12	.....	Do.
29	Fred. Laing, Barnsborough, Gloucester County	2	.....	Do.
29	George Ballinger, Barnsborough, Gloucester County	6	.....	Do.
29	Henry Cain, Barnsborough, Gloucester County	1	.....	Do.
29	Jenry Carr, Barnsborough, Gloucester County	3	.....	Do.
29	Howard Avis, Barnsborough, Gloucester County	1	.....	Do.
29	Alex. W. Davis, Barnsborough, Gloucester County	1	.....	Do.
29	Mrs. J. A. Clark, Barnsborough, Gloucester County	9	.....	Do.
30	David Kirkbride, Mantua, Gloucester County	1	.....	Do.
30	Isaac Bowers, Mantua, Gloucester County	1	.....	Do.
30	Paschal Hulings, Mantua, Gloucester County	2	.....	Do.
30	Smith Parker, Mantua, Gloucester County	1	.....	Do.
30	John T. Agden, Mantua, Gloucester County	2	.....	Do.
30	John Storm, Mantua, Gloucester County	2	.....	Do.
30	R. R. Hulings, Mantua, Gloucester County	1	.....	Do.
30	Dayton Chew, Mantua, Gloucester County	1	.....	Do.
30	Jos Sweeten, Mantua, Gloucester County	1	.....	Do.
30	George W. King, Mantua, Gloucester County	1	.....	Do.
30	S. D. Lodge, Mantua, Gloucester County	5	.....	Do.
30	Joseph Lodge, Malaga, Gloucester County	8	.....	Do.
30	Joseph Packer, Malaga, Gloucester County	5	.....	Do.
31	William R Skinner, Malaga, Gloucester County	5	.....	Do.
31	Joshua Scott, Malaga, Gloucester County	11	.....	Do.
31	Thomas C. Porch, Malaga, Gloucester County	22	.....	Do.
31	Aden Becket, Malaga, Gloucester County	2	.....	Do.
31	Philip Woodruff, Malaga, Gloucester County	1	.....	Do.
31	Isaac Smith, Malaga, Gloucester County	2	.....	Do.
31	Gideon Richmond, Malaga, Gloucester County	2	.....	Do.
31	M. Vanorte, Malaga, Gloucester County	3	.....	Do.
31	John B. Hay, Malaga, Gloucester County	2	.....	Do.
31	Sarah Smith, Malaga, Gloucester County	1	.....	Do.
31	John Steward, Malaga, Gloucester County	1	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
July 31	Daniel Morgan, Malaga, Gloucester County	1	.....	Good.
31	James Irdell, Malaga, Gloucester County	1	.....	Do.
31	A. K. Richmond, Malaga, Gloucester County	3	.....	Do.
31	Mrs. E. Wick, Malaga, Gloucester County	6	.....	Do.
31	Samuel Walker, Porchtown, Gloucester County	3	.....	Do.
Aug. 1	John Filer, Franklinville, Gloucester County	2	.....	Do.
1	Jos. Jaines, Franklinville, Gloucester County	9	.....	Do.
1	Henry Adams, Franklinville, Gloucester County	4	.....	Do.
1	George Hiles, Franklinville, Gloucester County	1	.....	Do.
1	Mr. Richards, Franklinville, Gloucester County	2	.....	Do.
1	Enos Veil, Franklinville, Gloucester County	3	.....	Do.
1	Benjamin Bates, Franklinville, Gloucester County	1	.....	Do.
1	George Robinson, Franklinville, Gloucester County	6	.....	Do.
1	Tom Lacy, Franklinville, Gloucester County	5	.....	Do.
1	Jos. Candle, Franklinville, Gloucester County	9	.....	Do.
1	Joseph Campbell, Franklinville, Gloucester County	7	.....	Fair.
1	James Matlock, Franklinville, Gloucester County	1	.....	Good.
1	Harry Ellis, Franklinville, Gloucester County	4	.....	Do.
1	Henry Huston Franklinville, Gloucester County	1	.....	Do.
1	David Carter, Franklinville, Gloucester County	3	.....	Do.
1	Thomas Wilson, Franklinville, Gloucester County	13	.....	Do.
3	Levi F. Smalley, Clayton, Gloucester Count	1	.....	Do.
3	Moses Crane, Clayton, Gloucester County	2	.....	Do.
3	J. Souder, Clayton, Gloucester County	6	.....	Do.
3	Jos. T. Davis, Clayton, Gloucester County	5	.....	Do.
3	Asbury Campbell, Clayton, Gloucester County	9	.....	Fair.
3	Elwood Davis, Clayton, Gloucester County	1	.....	Good.
3	James Myers, Clayton, Gloucester County	2	.....	Do.
3	J. W. Moore, Clayton, Gloucester County	3	.....	Do.
3	D. W. Moore, Clayton, Gloucester County	3	.....	Do.
3	Austin & Moore, Clayton, Gloucester County	19	.....	Do.
3	J. M. Sparks, Clayton, Gloucester County	9	.....	Do.
3	F. A. Campbell, Clayton, Gloucester County	10	.....	Fair.
3	B. F. Du Bois, Clayton, Gloucester County	6	.....	Good.
3	A. Buckingham, Clayton, Gloucester County	4	.....	Do.
3	Robert Noble, Clayton, Gloucester County	6	.....	Fair.
3	John Simpson, Clayton, Gloucester County	3	.....	Good.
3	William Porch, Clayton, Gloucester County	2	.....	Do.
3	John Shuck, Clayton, Gloucester County	4	.....	Do.
3	J. F. Hute, Clayton, Gloucester County	2	.....	Do.
4	John Iszard, Glassborough, Gloucester County	7	.....	Do.
4	Thomas Ballinger, Glassborough, Gloucester County	6	.....	Fair.
4	G. W. Tomlan, Glassborough, Gloucester County	2	.....	Good.
4	B. G. Zame, Glassborough, Gloucester County	5	.....	Do.
4	Mathias Zimmerman, Glassborough, Gloucester County	1	.....	Do.
5	Samuel Chew, Barnsborough, Gloucester County	1	.....	Do.
5	Aaron Ballinger, Mantua, Gloucester County	9	.....	Do.
5	Isaac M. Haines, Mantua, Gloucester County	6	.....	Do.
5	Stephen B. Eldridge, Mantua, Gloucester County	2	.....	Do.
5	J. L. Eldridge, Mantua, Gloucester County	6	.....	Do.
5	William Hendrickson, Mantua, Gloucester County	1	.....	Do.
5	Simon Zane, Mantua, Gloucester County	4	.....	Do.
5	Mr. Appleby, Mantua, Gloucester County	1	.....	Do.
5	David Eldridge, Mantua, Gloucester County	3	.....	Do.
5	Joseph Hurff, Mantua, Gloucester County	9	.....	Do.
5	Samuel Thomas, Mantua, Gloucester County	7	.....	Do.
5	Mark Herritage, Mantua, Gloucester County	5	.....	Do.
5	John L. Haines, Mantua, Gloucester County	3	.....	Do.
6	George C. Rogers & Son, Waldron Station, Gloucester Co	11	.....	Do.
6	George C. Rogers, Waldron Station, Gloucester County	18	.....	Do.
6	William Waldron, Waldron Station, Gloucester County	11	.....	Do.
6	Mrs. Herritage, Waldron Station, Gloucester County	10	.....	Fair.
7	David Rowe, Haddonfield, Camden County	18	.....	Good.
7	Samuel N. Rhoades, Mount Ephraim, Camden County	38	.....	Do.
8	Samuel J. Bronnin, Medford, Burlington County	18	.....	Do.
8	S. Levi Jones, Lumberton, Burlington County	6	.....	Do.
8	Caleb Ridgway, Vincentown, Burlington County	31	.....	Do.
	Inspections by Rowland & Hawk, V. S.			
Aug. 1	Mrs. McGuire, Jersey City Heights, Hudson County	10	.....	Stables, not good; animals, fair.
1	M. Miller, Jersey City Heights, Hudson County	20	.....	Fair.
1	Jerry Cullans, Jersey City Heights, Hudson County	14	.....	Good.
1	M. Owens, near Bayonne, Hudson County	16	.....	Do.
1	J. Malony, near Bayonne, Hudson County	15	.....	Fair.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung plague.	Condition.
	Inspections by Rowland & Hawk, V. S.—Continued.			
1885.				
Aug. 3	James Murphy, Jersey City Heights, Hudson County	17	.....	Good.
3	John Culla, Jersey City Heights, Hudson County	22	.....	Do.
3	Tom Scanland, Jersey City Heights, Hudson County	17	.....	Do.
3	M. Stockfish, West Bergen, Hudson County	25	.....	Do.
3	Fred. Girchman, Jersey City Heights, Hudson County	11	1	Fair.
4	—— Litherman, Secaucus, Hudson County	68	.....	Good.
4	George Harms, Secaucus, Hudson County	9	.....	Do.
4	M. Fingerger, Secaucus, Hudson County	82	.....	Fair.
4	Litherman & Son, Secaucus, Hudson County	34	.....	Do.
5	M. Block, Secaucus, Hudson County	19	.....	Do.
5	W. Wonderer, near Secaucus, Hudson County	15	.....	Not good.
5	Nicholas Oleman, Secaucus, Hudson County	18	.....	Fair.
5	John Kretz, West Hoboken, Hudson County	27	.....	Good.
5	Mich. Dorphus, West Hoboken, Hudson County	10	.....	Do.
5	Herwitz & Levinthal, West Hoboken, Hudson County	49	.....	Do.
5	J. Warrington, West Hoboken, Hudson County	12	.....	Do.
5	Patrick Duff, West Hoboken, Hudson County	22	.....	Do.
5	D. Torpie, West Hoboken, Hudson County	14	.....	Do.
7	J. Graves, near Weehawken, Hudson County	19	.....	Do.
7	L. Folk, near Weehawken, Hudson County	26	.....	Do.
7	John Freeman, near Weehawken, Hudson County	61	.....	Do.
7	William Fink, near Weehawken, Hudson County	10	.....	Do.
7	John Lebing, near Weehawken, Hudson County	12	.....	Do.
7	A. Kingsley, near Weehawken, Hudson County	20	.....	Do.
7	W. Blair, near West New York, Hudson County	15	.....	Do.
7	Mike Dunn, near West New York, Hudson County	10	.....	Do.
7	Mrs. Brickerton, near West New York, Hudson County	5	.....	Do.
7	Commons, near Guttenburg, Hudson County	1	1	Do.
10	J. Autenreath, Marion, Hudson County	1	.....	Fair.
10	S. Carney, Bergen Point, Hudson County	51	.....	Do.
10	S. Kelley, Bergen Point, Hudson County	6	.....	Good.
10	M. Van Winkle, near Marion, Hudson County	5	.....	Do.
10	F. E. Ulitze, near Marion, Hudson County	16	.....	Do.
10	Pat Sexton, near Marion, Hudson County	15	.....	Do.
10	Samuel McCarthy, near Bayonne, Hudson County	6	.....	Do.
10	Dr. Watson, near Bayonne, Hudson County	3	.....	Do.
10	Augustus Smith, near Bayonne, Hudson County	7	.....	Do.
10	M. D. Jewett, near Bayonne, Hudson County	14	.....	Do.
10	John Linchman, near Jersey City Heights, Hudson County	18	.....	Fair.
11	Abner Styles, near Springfield, Essex County	9	.....	Good.
11	W. B. Styles, near Springfield, Essex County	4	.....	Do.
11	James Rall, near Springfield, Essex County	16	.....	Do.
11	William Miller, near Westfield, Essex County	6	.....	Do.
11	James Fink, near Westfield, Essex County	3	.....	Do.
11	W. S. Sconover, near Westfield, Essex County	10	.....	Do.
11	James Coles, near Netherwood, Union County	8	.....	Do.
11	M. Ward, near Netherwood, Union County	28	.....	Do.
11	W. Tompkins, near Netherwood, Union County	45	.....	Do.
11	William Augustus Brown, Netherwood, Union County	20	.....	Do.
11	Wilber Curdy, Netherwood, Union County	18	.....	Do.
12	Warren Ackerman, near Plainfield, Union County	106	.....	Do.
12	John Wilson, near Plainfield, Union County	58	.....	Do.
12	W. Cadmus, Dunellen, Union County	25	.....	Do.
12	M. Baitman, near Bound Brook, Somerset County	10	.....	Do.
14	James Jones, near Bound Brook, Somerset County	24	.....	Do.
14	M. Van Pelt, near Bound Brook, Somerset County	14	.....	Do.
14	J. Cornell, Bound Brook, Somerset County	28	.....	Do.
14	John C. Shaw, Bound Brook, Somerset County	18	.....	Do.
14	M. Coatse, East Somerville, Somerset County	12	.....	Do.
14	John H. Lord, Somerville, Somerset County	25	.....	Do.
14	John Read, Flemington, Hunterdon County	10	.....	Do.
15	Alex. Dunn, Flemington, Hunterdon County	26	.....	Do.
15	William Washburn, Flemington, Hunterdon County	40	.....	Do.
15	J. Freeman, Flemington, Hunterdon County	30	.....	Do.
15	William B. Dally, Flemington, Hunterdon County	25	.....	Do.
15	M. N. Porter, Flemington, Hunterdon County	16	.....	Do.
15	John Lain, Flemington, Hunterdon County	15	.....	Do.
15	Striker Shirk, Flemington, Hunterdon County	48	.....	Do.
5	Gould Dill, near Flemington Junction, Hunterdon County	20	.....	Do.
5	C. C. Lain, near Flemington Junction, Hunterdon County	16	.....	Do.
	Inspections by Miller & Dyer, V. S.			
Aug. 5	M. Voorhees, near Flemington Junction, Hunterdon County	28	.....	Good.
10	A. H. Locke, near Woodbury, Gloucester County	7	.....	Do.
10	Clement Reeves, near Woodbury, Gloucester County	15	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
Aug. 10	Mark B. Lippincott, near Woodbury, Gloucester County	12	.....	Good.
10	Samuel Hopkins, Paulsborough, Gloucester County	11	.....	Do.
11	Israel Souder, Glassborough, Gloucester County	6	.....	Do.
11	Alonza Thomas, Glassborough, Gloucester County	3	.....	Do.
11	William Edwards, Downer Station, Gloucester County	1	.....	Do.
11	William Armstrong, Downer Station, Gloucester County	2	.....	Do.
11	Samuel Craig, Downer Station, Gloucester County	3	.....	Do.
11	Robert Brown, Downer Station, Gloucester County	3	.....	Do.
11	Edward Duncan, Downer Station, Gloucester County	2	.....	Do.
11	Arthur Downer, Downer Station, Gloucester County	11	.....	Do.
11	George Thomson, Downer Station, Gloucester County	1	.....	Do.
12	Thomas Anderson, Glassborough, Gloucester County	4	.....	Do.
12	T. C. Allen, Glassborough, Gloucester County	5	.....	Do.
12	Richard Parker, Glassborough, Gloucester County	1	.....	Do.
12	John Waltman, Franklinville, Gloucester County	1	.....	Do.
12	Charles Myers, Franklinville, Gloucester County	2	.....	Do.
12	Peter Peterson, Franklinville, Gloucester County	2	.....	Do.
12	R. Thomas Hurst, Franklinville, Gloucester County	4	.....	Do.
12	Walter J. Rur, Franklinville, Gloucester County	1	.....	Do.
12	Ural Jessen, Franklinville, Gloucester County	1	.....	Do.
12	A. Hughes, Franklinville, Gloucester County	3	.....	Do.
12	William Nelson, Franklinville, Gloucester County	2	.....	Do.
12	Mr. Spawling, Franklinville, Gloucester County	1	.....	Do.
12	J. H. Levy, Franklinville, Gloucester County	2	.....	Do.
13	Andrew Cook, near Salem, Salem County	15	.....	Stables, good; animals, fair.
13	Andrew Cook, near Salem, Salem County	10	.....	Do.
13	Johnson Cuff, near Salem, Salem County	15	.....	Stables, fair; animals, poor.
13	Charles Dunn, near Salem, Salem County	11	.....	Stables, good; animals, fair.
13	William Dunn, near Salem, Salem County	9	.....	Do.
13	William Switcher, near Salem, Salem County	5	.....	Good.
13	Charles Switcher, near Salem, Salem County	13	.....	Do.
14	Mrs. Ayers, near Salem, Salem County	11	.....	Do.
14	John Crispin, near Salem, Salem County	20	.....	Do.
14	Charles Lindsley, near Salem, Salem County	12	.....	Do.
14	William Gilbert, near Salem, Salem County	2	.....	Do.
14	Albert Dolbin, near Salem, Salem County	1	.....	Do.
14	Ephraim Griscom, near Salem, Salem County	8	.....	Do.
14	John Lloyds, near Salem, Salem County	13	.....	Do.
14	Foreman Lloyds, near Salem, Salem County	17	.....	Do.
14	Henry Keene, near Salem, Salem County	4	.....	Do.
14	George W. Fowler, near Salem, Salem County	16	.....	Do.
14	Sarah Urion, near Salem, Salem County	27	.....	Do.
15	James S. Johnson, near Salem, Salem County	15	.....	Do.
15	B. A. Tyler, near Salem, Salem County	18	.....	Do.
15	Joseph G. Haucock, near Salem, Salem County	23	.....	Do.
15	Samuel Taylor, near Salem, Salem County	29	.....	Do.
15	Catharine Sullivan, near Salem, Salem County	4	.....	Stables, good; animals, fair.
15	Joseph E. Boone, near Salem, Salem County	22	.....	Do.
	Inspections by Rowland & Hawk, V. S.			
Aug. 17	J. Van Cleaf, near Readington, Hunterdon County	12	.....	Good.
17	John S. Bergen, near Readington, Hunterdon County	24	.....	Do.
17	A. F. Conners, near Readington, Hunterdon County	15	.....	Do.
17	H. Camp, near Frenchtown, Hunterdon County	16	.....	Do.
17	Mose Seley, Frenchtown, Hunterdon County	30	.....	Do.
17	Syrus Seppler, near Frenchtown, Hunterdon County	40	.....	Do.
18	J. Marsh, near Bloomsburg, Warren County	25	.....	Do.
18	Joe Ross, near Bloomsburg, Warren County	29	.....	Do.
18	Godfrey Cole, near Bloomsburg, Warren County	9	.....	Do.
18	M. Herrins, near Bloomsburg, Warren County	30	.....	Do.
18	William Huddleson, near Bloomsburg, Warren County	39	.....	Do.
19	J. Clark, near Bloomsburg, Warren County	30	.....	Do.
19	S. M. Kline, near Bloomsburg, Warren County	47	.....	Do.
19	James Thatcher, near Bloomsburg, Warren County	49	.....	Do.
19	Samuel T. Jones, near Bloomsburg, Warren County	28	.....	Do.
21	Fred. Shirtz, Pattenburg, Warren County	40	.....	Do.
21	John Parks, Pattenburg, Warren County	36	.....	Do.
21	Joseph Smith, Pattenburg, Warren County	50	.....	Do.
21	M. Campbell, Pattenburg, Warren County	23	.....	Do.
22	William McIlhaney, near Neshanic, Hunterdon County	37	9	Stables, very fine; animals, good.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition
	Inspections by Rowland & Hawk, V. S.—Continued.			
1885.				
Aug. 24	George Feck, near Clinton, Hunterdon County	30	.....	Good.
24	William A. Young, near Clinton, Hunterdon County	36	.....	Do.
24	John Freck, near Clinton, Hunterdon County	40	.....	Do.
24	Krigg's Kramer, near Clinton, Hunterdon County	19	.....	Do.
25	N. G. Stager, near Woodfern, Hunterdon County	25	.....	Do.
27	William McIlhaney, near Neshanic, Hunterdon County	33	12	Do.
28	J. W. Fredricks, near Clinton, Hunterdon County	24	.....	Do.
28	James Kramer, near Clinton, Hunterdon County	56	.....	Do.
28	G. Clark, Pittstown, Hunterdon County	20	.....	Do.
28	David Stock, Pittstown, Hunterdon County	19	.....	Do.
29	John Randolph, near Seaberon, Hunterdon County	40	.....	Do.
29	J. C. Higgins, near Seaberon, Hunterdon County	26	.....	Do.
29	J. Apgar, Annandale, Hunterdon County	15	.....	Do.
29	M. Hulsizer, Annandale, Hunterdon County	10	.....	Do.
31	Benjamin Skillman, White Horse, Hunterdon County	50	.....	Do.
31	Samuel Little, White Horse, Hunterdon County	20	.....	Do.
31	A. Styner, White Horse, Hunterdon County	25	.....	Do.
31	Gilbert Huffman, White Horse, Hunterdon County	20	.....	Do.
31	J. Nevir, near Somerville, Hunterdon County	25	.....	Do.
	Inspections by Miller & Dyer, V. S.			
Aug. 17	Joseph Avis, Woodstown, Salem County	1	.....	Good.
17	Smith Ridgway, Woodstown, Salem County	1	.....	Do.
17	J. M. C. Richmond, Woodstown, Salem County	1	.....	Do.
17	William Vanneman, Woodstown, Salem County	1	.....	Do.
17	Thomas Ruff, Woodstown, Salem County	1	.....	Do.
17	Robert Hewett, Woodstown, Salem County	1	.....	Do.
17	George W. Crothers, Woodstown, Salem County	1	.....	Do.
17	Thomas Lippincott, Woodstown, Salem County	1	.....	Do.
17	Daniel Ware, Woodstown, Salem County	1	.....	Do.
17	Israel Hewett, Woodstown, Salem County	2	.....	Do.
17	Smith Hewett, Woodstown, Salem County	1	.....	Do.
17	John Wallace, Woodstown, Salem County	6	.....	Do.
17	Mrs. Hinchman, Woodstown, Salem County	1	.....	Do.
17	Mahlon D. Dickenson, Woodstown, Salem County	1	.....	Do.
17	John Adams, Woodstown, Salem County	1	.....	Do.
17	Mrs. J. Flitcraft, Woodstown, Salem County	1	.....	Do.
17	John W. Dickenson, Woodstown, Salem County	1	.....	Do.
17	Jesse Lippincott, Woodstown, Salem County	1	.....	Do.
17	Hewett & Smith, Woodstown, Salem County	17	.....	Do.
17	Ernest Bisker, Woodstown, Salem County	21	.....	Excellent.
18	Howard Bassett, near Woodstown, Salem County	13	.....	Good.
18	Thomas Smith, Woodstown, Salem County	19	.....	Do.
18	Henry Justise, Woodstown, Salem County	15	.....	Do.
18	William Hewett, Woodstown, Salem County	12	.....	Do.
18	Nathaniel Robbins, near Woodstown, Salem County	6	.....	Do.
18	Casper Crispin, near Woodstown, Salem County	7	.....	Do.
18	Simon Wentzell, near Woodstown, Salem County	10	.....	Do.
18	Chalkey Kirby, near Woodstown, Salem County	11	.....	Do.
18	David Davis, near Woodstown, Salem County	22	.....	Do.
18	Joseph K. Lippincott, near Woodstown, Salem County	40	.....	Do.
18	John Hutchenson, near Woodstown, Salem County	4	.....	Do.
18	James McAllister, near Woodstown, Salem County	13	.....	Do.
18	Benjamin Murphy, near Woodstown, Salem County	13	.....	Do.
18	Nathan R. Lippincott, near Woodstown, Salem County	17	.....	Do.
18	Paul McAllister, near Woodstown, Salem County	22	.....	Do.
19	Levi Prickett, Williamstown, Gloucester County	4	.....	Do.
19	Samuel Fleming, Williamstown, Gloucester County	1	.....	Do.
19	Jacob Joseph, Williamstown, Gloucester County	1	.....	Do.
19	James Souder, Williamstown, Gloucester County	4	.....	Do.
19	Joseph Simmerman, Williamstown, Gloucester County	2	.....	Do.
19	Benjamin Simmerman, Williamstown, Gloucester County	2	.....	Do.
19	John P. Rockwell, Williamstown, Gloucester County	1	.....	Do.
19	John R. Joseph, Williamstown, Gloucester County	1	.....	Do.
19	Charles Eldridge, Williamstown, Gloucester County	4	.....	Do.
19	A. Eldridge, Williamstown, Gloucester County	6	.....	Do.
19	B. Sicker, Williamstown, Gloucester County	7	.....	Do.
19	Daniel Earling, Williamstown, Gloucester County	3	.....	Do.
19	William Joseph, Williamstown, Gloucester County	1	.....	Do.
19	Al. Hough, Williamstown, Gloucester County	3	.....	Do.
19	William Rockhill, Williamstown, Gloucester County	1	.....	Do.
19	E. S. Freeland, Williamstown, Gloucester County	2	.....	Do.
19	Edw. Elliott, Williamstown, Gloucester County	1	.....	Do.
19	W. H. Bodine, Williamstown, Gloucester County	1	.....	Do.
19	M. M. Chew, Williamstown, Gloucester County	2	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
Aug. 20	Mrs. Susan Well, Williamstown, Gloucester County	12	.....	Do.
20	Godfrey Miller, Williamstown, Gloucester County	5	.....	Do.
20	Mary White, Williamstown, Gloucester County	1	.....	Do.
20	William C. Steelman, Williamstown, Gloucester County	3	.....	Do.
20	William Steelman, Williamstown, Gloucester County	2	.....	Do.
20	Jacob Imhoff, Williamstown, Gloucester County	7	.....	Do.
20	James Ellison, Williamstown, Gloucester County	3	.....	Do.
20	William Sykes, near Williamstown, Gloucester County	11	.....	Do.
20	John White, Williamstown, Gloucester County	2	.....	Do.
20	Robert Westcoat, Williamstown, Gloucester County	3	.....	Do.
20	George W. Green, Williamstown, Gloucester County	1	.....	Do.
20	John Proul, Williamstown, Gloucester County	3	.....	Do.
20	Robert Miller, Williamstown, Gloucester County	3	.....	Do.
20	Silas Huntsinger, Williamstown, Gloucester County	1	.....	Do.
20	Henry Naby, Williamstown, Gloucester County	1	.....	Do.
20	Thomas S. Bateman, Williamstown, Gloucester County	11	.....	Do.
21	Joseph J. Ayres, Williamstown, Gloucester County	1	.....	Do
21	E. C. Bodine, Williamstown, Gloucester County	5	.....	Do.
21	T. D. Tice, Williamstown, Gloucester County	5	.....	Do.
21	Charles Tice, Williamstown, Gloucester County	2	.....	Do.
21	William H. Tice, Williamstown, Gloucester County	2	.....	Do.
21	Dr. Kelway, Williamstown, Gloucester County	1	.....	Do.
21	Clayton D. Tice, Williamstown, Gloucester County	4	.....	Do.
21	David Tice, Williamstown, Gloucester County	3	.....	Do.
21	Richard Tice, Williamstown, Gloucester County	3	.....	Do.
21	Samuel Dehart, Williamstown, Gloucester County	2	.....	Do.
21	Thomas Hayes, Williamstown, Gloucester County	1	.....	Do.
21	M. Miller, Williamstown, Gloucester County	1	.....	Do.
21	Mrs. Dehart, Williamstown, Gloucester County	1	.....	Do.
21	John Dehart, Williamstown, Gloucester County	1	.....	Do.
21	Jacob Turner, Williamstown, Gloucester County	2	.....	Do.
22	John Flexon, Williamstown Gloucester County	2	.....	Do.
22	Mrs. M. Alderman, Williamstown, Gloucester County	3	.....	Do.
22	J. B. Eldridge, Williamstown, Gloucester County	2	.....	Do.
22	Thomas Joseph, Williamstown, Gloucester County	2	.....	Do.
22	James D. Tweed, Williamstown, Gloucester County	3	.....	Do.
22	James M. Tweed, Williamstown, Gloucester County	8	.....	Do.
22	F. Frederick, Williamstown, Gloucester County	8	.....	Do.
22	A. Hoffman, Williamstown, Gloucester County	1	.....	Do.
22	A. Albertson, Williamstown, Gloucester County	1	.....	Do.
22	Benjamin Pearce, Williamstown, Gloucester County	1	.....	Do.
22	S. Doughty, Williamstown, Gloucester County	2	.....	Do.
22	Aug. Wetzell, Williamstown, Gloucester County	1	.....	Do.
22	J. B. Sickler, Williamstown, Gloucester County	2	.....	Do.
22	Joshua Eldridge, Williamstown, Gloucester County	1	.....	Do.
	Inspections by W. B. E. Miller, V. S.			
Aug. 24	M. Fennfer, Pavonia, Camden County	7	.....	Good.
24	Samuel N. Rhoades, Mount Ephraim, Camden County	37	.....	Do.
	Inspections by C. K. Dyer, V. S.			
Aug. 24	S. Levi Jones, Lumberton, Burlington County	5	.....	Good.
24	Samuel J. Brann, Medford, Burlington County	18	.....	Do.
24	Caleb Ridgway, Vincentown, Burlington County	31	.....	Do.
	Inspections by Miller & Dyer, V. S.			
Aug. 25	William Johnson, Turkey, Monmouth County	7	.....	Good.
26	William Ferguson, near Woodstown, Salem County	7	.....	Do.
26	Samuel Lippincott, near Woodstown, Salem County	12	.....	Do.
26	Charles E. Davis, near Woodstown, Salem County	19	.....	Do.
26	Isaac A. Turner, near Woodstown, Salem County	9	.....	Do.
26	Alfred McAllister, near Woodstown, Salem County	7	.....	Do.
26	Richard Kirby, near Woodstown, Salem County	12	.....	Do.
26	Gideon Crispen, near Woodstown, Salem County	5	.....	Do.
26	Isaac Zane, near Woodstown, Salem County	1	.....	Do.
26	William Gillmore, near Woodstown, Salem County	9	.....	Do.
26	James D. Lawson, near Woodstown, Salem County	1	.....	Do.
26	F. Davis, near Woodstown, Salem County	18	.....	Do.
26	Charles H. G. Pancoast, near Woodstown, Salem County	1	.....	Do.
26	Strat. Mitchell, near Woodstown, Salem County	11	.....	Do.
27	John C. Duell, near Woodstown, Salem County	11	.....	Do.
27	Thomas Peterson, near Woodstown, Salem County	11	.....	Do.
27	Alfred Marshall, near Woodstown, Salem County	11	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
Aug. 27	Amos Peterson, near Woodstown, Salem County	10	.....	Good.
27	William S. Clarke, near Woodstown, Salem County	5	.....	Do.
27	Isaac Hiles, near Woodstown, Salem County	7	.....	Do.
27	Samuel Ballinger, near Woodstown, Salem County	2	.....	Do.
27	John Haines, near Woodstown, Salem County	7	.....	Do.
27	Aaron Edwards, near Woodstown, Salem County	3	.....	Do.
27	Samuel B. Pancoast, near Woodstown, Salem County	4	.....	Do.
27	Richard Matlack, near Woodstown, Salem County	1	.....	Do.
27	James Kilpatrick, near Woodstown, Salem County	1	.....	Do.
27	James Daniels, near Woodstown, Salem County	1	.....	Do.
27	James Kilpatrick, jr., near Woodstown, Salem County	5	.....	Do.
27	William Cooper, near Woodstown, Salem County	2	.....	Do.
27	William C. Davis, near Woodstown, Salem County	9	.....	Do.
27	John Borton, near Woodstown, Salem County	4	.....	Do.
27	Joel Borton, jr., near Woodstown, Salem County	12	.....	Do.
27	William Lippincott, near Woodstown, Salem County	3	.....	Do.
28	Patrick Canan, near Woodstown, Salem County	16	.....	Stables, good; animals, fair.
28	Joseph L. Duvall, near Woodstown, Salem County	16	.....	Good.
28	Samuel Duell, near Woodstown, Salem County	6	.....	Do.
28	Charles Collins, near Woodstown, Salem County	2	.....	Do.
28	Stephen M. Gess, near Woodstown, Salem County	1	.....	Do.
28	Isaac Ballinger, near Woodstown, Salem County	2	.....	Do.
28	Ed. Riley, near Woodstown, Salem County	1	.....	Do.
28	Reeves Whitcraft, near Woodstown, Salem County	16	.....	Do.
28	D. W. White & Son, near Woodstown, Salem County	24	.....	Do.
28	William Hampton, near Woodstown, Salem County	8	.....	Do.
28	Charles Hewitt, near Woodstown, Salem County	4	.....	Do.
28	Henry Hewitt, near Woodstown, Salem County	12	.....	Do.
28	Joel Borton, near Woodstown, Salem County	3	.....	Stables, good; animals, fair.
28	William Patterson, near Woodstown, Salem County	5	.....	Do.
28	Joseph Stratton, near Woodstown, Salem County	1	.....	Good.
29	J. Riley, near Woodstown, Salem County	6	.....	Do.
29	Charles Moneirief, near Woodstown, Salem County	1	.....	Do.
29	Edgar Moore, near Woodstown, Salem County	11	.....	Do.
29	C. C. Harrison, near Woodstown, Salem County	5	.....	Do.
29	William Adams, near Woodstown, Salem County	4	.....	Do.
29	Robert McCoobrey, near Woodstown, Salem County	2	.....	Do.
29	Ira Coles, near Woodstown, Salem County	13	.....	Do.
29	Thomas Batton, near Woodstown, Salem County	9	.....	Do.
29	Jeffrey Moore, near Woodstown, Salem County	8	.....	Do.
29	Samuel Robinson, near Woodstown, Salem County	18	.....	Do.
29	John Duffy, near Woodstown, Salem County	1	.....	Do.
29	Frank Headley, near Woodstown, Salem County	1	.....	Do.
29	Rachel Kelly, near Woodstown, Salem County	3	.....	Do.
29	Jos. Coles, near Woodstown, Salem County	11	.....	Do.
29	Elmer Duel, near Woodstown, Salem County	17	.....	Do.
29	Borton Somers, near Woodstown, Salem County	13	.....	Do.
29	Michael Smith, near Woodstown, Salem County	2	.....	Do.
29	Joseph M. Borton, near Woodstown, Salem County	10	.....	Do.
29	Walter Edwards, near Woodstown, Salem County	12	.....	Do.
29	John Bishop, near Woodstown, Salem County	4	.....	Do.
31	George Lundy, Juliustown, Burlington County	40	.....	Do.
Sept. 1	Jacob C. Lippincott, near White Horse, Camden County	20	.....	Do.
1	E. E. Hunt, near White Horse, Camden County	6	.....	Do.
1	Ernest Weigand, near White Horse, Camden County	11	.....	Do.
1	Christ. Hartner, near White Horse, Camden County	2	.....	Do.
1	Pop McCafferty, near White Horse, Camden County	3	.....	Stables, good; animals, poor.
1	Mr. Binker, near White Horse, Camden County	3	.....	Good.
1	William Kraft, near White Horse, Camden County	3	.....	Do.
1	Mr. Devine, near White Horse, Camden County	1	.....	Do.
1	Jacob Haleigh, near White Horse, Camden County	4	.....	Do.
1	John Davis, near White Horse, Camden County	1	.....	Do.
1	Peter Quin, near Snow Hill, Camden County	3	.....	Do.
1	Author Jones, near Snow Hill, Camden County	1	.....	Do.
1	Mrs. Jones, near Snow Hill, Camden County	.....	.....	Do.
2	George Smith, near White Horse, Camden County	2	.....	Do.
2	Henry Hilbert, near Haddonfield, Camden County	7	.....	Do.
2	John Lyons, near Haddonfield, Camden County	2	.....	Do.
2	A. S. Hillman, near Haddonfield, Camden County	11	.....	Do.
2	George Holloway, near Haddonfield, Camden County	3	.....	Do.
2	R. T. Hurff, near Haddonfield, Camden County	14	.....	Do.
2	William White, near Haddonfield, Camden County	2	.....	Do.
2	Amos. G. Haines, near Haddonfield, Camden County	2	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
1885.	*Inspections by Miller & Dyer, V. S.*—Continued.			
Sept. 2	John McCary, near Haddonfield, Camden County	3	.....	Good.
2	Leonard Fleck, near Haddonfield, Camden County	1	.....	Do.
2	Mrs. Elliott, near Haddonfield, Camden County	3	.....	Stables, good; animals, fair.
2	Wilson Coffin, near Ashland, Camden County	17	.....	Good.
2	Alex. Cooper & Son, near Ashland, Camden County	44	.....	Do.
3	Mrs. Dungan, near Milford, Camden County	2	.....	Do.
3	John Craig, near Milford, Camden County	32	.....	Do.
3	Charles Hillman, near Milford, Camden County	9	.....	Do.
3	Rebecca Holten, near Milford, Camden County	7	.....	Do.
3	George Merkle, near Milford Camden County	12	.....	Do.
3	William Haines, near Milford, Camden County	23	.....	Do.
3	Levi Kimble, near Milford, Camden County	18	.....	Do.
3	Davis Bros., near Milford, Camden County	5	.....	Do.
3	Peter Swain, near Milford, Camden County	6	.....	Do.
3	George Withal, near Milford, Camden County	4	.....	Do.
4	Bowman S. Lippincott, near Milford, Camden County	13	.....	Do.
5	John Carroll, Camden, Camden County	4	.....	Poor.
5	James Carroll, Camden, Camden County	2	.....	Do.
5	M. Feenfer, Pavonia, Camden County	7	1	Good.
7	Thomas Moore, near Woodstown, Salem County	9	.....	Do.
7	Aaron B. Somers, near Woodstown, Salem County	21	.....	Do.
7	William W. Banks, near Woodstown, Salem County	5	.....	Do.
7	John Keene, near Woodstown, Salem County	5	.....	Do.
7	Paul Avis, near Woodstown, Salem County	5	.....	Do.
7	Thomas E. Peterson, near Woodstown, Salem County	1	.....	Do.
8	Samuel Dean, near Woodstown, Salem County	7	.....	Do.
8	David Dean, near Woodstown, Salem County	5	.....	Do.
8	E. L. Borton, near Woodstown, Salem County	4	.....	Do.
8	S. Jackson Morgan, near Woodstown, Salem County	12	.....	Do.
8	James P. Stratton, near Woodstown, Salem County	13	.....	Do.
8	David Waddington, near Woodstown, Salem County	10	.....	Do.
9	H. V. Lynch, near Woodstown, Salem County	15	.....	Do.
9	George Kirby, near Woodstown, Salem County	7	.....	Fair.
9	Edward Sibley, near Woodstown, Salem County	6	.....	Do.
9	Henry Hewitt, near Woodstown, Salem County	3	.....	Good.
9	Henry Bishop, near Woodstown, Salem County	13	.....	Do.
9	Samuel Barber, near Woodstown, Salem County	7	.....	Fair.
10	Samuel Dickinson, Richmond Mills, Salem County	7	.....	Good.
10	Clayton Lokerson, Richmond Mills, Salem County	8	.....	Do.
10	Richard Wentzell, Richmond Mills, Salem County	6	.....	Do.
10	Gates & Avis, near Richmond Mills, Salem County	2	.....	Do.
10	A. Borton, near Richmond Mills, Salem County	5	.....	Do.
10	George Lance, jr., near Richmond Mills, Salem County	9	.....	Do.
10	Jacob Redrick & Son, near Richmond Mills, Salem County	20	.....	Do.
11	Samuel Brain, near Medford, Burlington County	18	.....	Do.
12	S. Levi Jones, Lumberton, Burlington County	6	.....	Do.
12	William Johnson, Turkey, Monmouth County	7	.....	Do.
	Inspections by Rowland & Hawk, V. S.			
Sept. 1	M. Connell, near White House, Hunterdon County	26	.....	Good.
1	S. B. Bristell, near White House, Hunterdon County	19	.....	Do.
1	M. Wackter, near White House, Hunterdon County	15	.....	Do.
1	G. Fullmer, near White House, Hunterdon County	15	.....	Do.
2	James Van Sickle, near White House, Hunterdon County	75	.....	Do.
2	Mrs. I. Bellis, near White House, Hunterdon County	9	.....	Do.
2	John Sarad, near White House, Hunterdon County	23	.....	Do.
2	David Cline, near White House, Hunterdon County	22	.....	Do.
3	William McIlhany, near Neshanic, Hunterdon County	12	1	Do.
3	M. Yanger, near Neshanic, Hunterdon County	12	1	Do.
4	G. C. Higgins, Somerville, Somerset County	30	.....	Do.
4	Jacob F. Randolph, Somerville, Somerset County	31	.....	Do.
4	Mrs. S. Wilber, Somerville, Somerset County	35	.....	Do.
4	M. Dilks, Somerville, Somerset County	36	.....	Do.
7	John Frazer, Somerville, Somerset County	15	.....	Do.
7	S. E. Robins, near Somerville, Somerset County	12	.....	Do.
7	Lewis Dilley, near Somerville, Somerset County	8	.....	Do.
7	William Cline, near Somerville, Somerset County	70	.....	Do.
7	Martin Bellis, near Somerville, Somerset County	15	.....	Do.
8	Samuel Bowers, near Somerville, Somerset County	18	.....	Do.
8	William Gildersmith, near Somerville, Somerset County	20	.....	Do.
8	J. P. Parins, near Somerville, Somerset County	12	.....	Do.
8	John Updike, near Somerville, Somerset County	18	.....	Do.
8	W. Hamilton, near Somerville, Somerset County	30	.....	Do.
8	John Vactsey, near Somerville, Somerset County	40	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Rowland & Hawk, V. S.—Continued.			
1885.				
Sept. 9	Robert Quick, near Raritan, Somerset County	30	.....	Good.
9	John Geneverdike, near Raritan, Somerset County	18	.....	Do.
9	Frank Severts, near Raritan, Somerset County	40	.....	Do.
9	David Pitch, near Raritan, Somerset County	15	.....	Do.
9	M. R. Updike, near Raritan, Somerset County	18	.....	Do.
10	Chamberlin Jenlitz, near Flagtown, Somerset County	14	.....	Do.
10	Rindel Sterlick, near Flagtown, Somerset County	25	.....	Do.
10	John A. Van Ness, near Flagtown, Somerset County	23	.....	Do.
10	J. McBride, near Flagtown, Somerset County	40	.....	Do.
11	William Striker, near Raritan, Somerset County	10	.....	Do.
11	Augustus Bullman, near Raritan, Somerset County	12	.....	Do.
11	James Austin, near Raritan, Somerset County	28	.....	Do.
11	Jacob Julic, near Raritan, Somerset County	40	.....	Do.
11	William C. Bumiston, near Raritan, Somerset County	12	.....	Do.
	Inspections by Miller & Dyer, V. S.			
Sept. 15	Samuel Smith, Yorktown, Salem County	1	.....	Good.
15	Sallie Jones, Yorktown, Salem County	1	.....	Do.
15	Beck Allen, Yorktown, Salem County	2	.....	Do.
15	Charles Banks, Yorktown, Salem County	2	.....	Do.
15	John S. Elwell, Yorktown, Salem County	3	.....	Do.
15	Wilbert Richman, Yorktown, Salem County	1	.....	Do.
15	Aaron Shoulder, Yorktown, Salem County	1	.....	Do.
15	Joseph Cole, Yorktown, Salem County	1	.....	Do.
15	John K. Deacon, Yorktown, Salem County	3	.....	Do.
15	V. Given, Yorktown, Salem County	5	.....	Do.
15	Alfred Remson, Yorktown, Salem County	11	.....	Do.
15	Charles Boon, near Woodstown, Salem County	6	.....	Do.
15	William Clark, near Woodstown, Salem County	1	.....	Do.
15	Samuel Gruff, near Woodstown, Salem County	1	.....	Do.
15	Miss E. Reeves, near Woodstown, Salem County	14	.....	Do.
16	Isaac J. Richman, near Richmanville, Salem County	11	.....	Do.
16	Henry A. Richman, near Richmanville, Salem County	12	.....	Do.
16	Charles H. Richman, near Richmanville, Salem County	19	.....	Do.
16	J. C. Dubois, near Richmanville, Salem County	6	.....	Do.
16	Levi Prickett, near Webster's Mills, Salem County	5	.....	Do.
16	Thomas Brick, near Webster's Mills, Salem County	4	.....	Do.
16	Jos. M. Weatherby, near Webster's Mills, Salem County	40	.....	Do.
16	Edw. K. Robinson, near Webster's Mills, Salem County	7	.....	Do.
16	Mr. Webster, near Webster's Mills, Salem County	1	.....	Do.
17	Eli Kirby, Richmanville, Salem County	8	.....	Do.
17	James Robinson, Richmanville, Salem County	2	.....	Do.
17	Stephen Smith, Richmanville, Salem County	10	.....	Do.
17	Samuel R. Morgan, Richmanville, Salem County	9	.....	Do.
17	Richard Goslin, Richmanville, Salem County	1	.....	Do.
17	Clayton Lockerson, Richmanville, Salem County	1	.....	Do.
17	John Elwell, Richmanville, Salem County	5	.....	Do.
17	John Johnson, Richmanville, Salem County	8	.....	Do.
17	Israel Morgan, Richmanville, Salem County	17	.....	Do.
17	Jacob Miller, Richmanville, Salem County	11	.....	Do.
18	Charles Hitchner, Daretown, Salem County	14	.....	Do.
18	R. B. Ware, Daretown, Salem County	17	.....	Do.
18	S. Johnson Dubois, Daretown, Salem County	13	.....	Do.
18	W. J. Dubois, Daretown, Salem County	5	.....	Do.
18	Henry R. Dubois, Daretown, Salem County	12	.....	Do.
18	Rowland Foster, Daretown, Salem County	4	.....	Do.
18	Dr. Cook, Daretown, Salem County	1	.....	Do.
18	Dr. M. J. Paulding, Daretown, Salem County	25	.....	Do.
18	George Johnson, Daretown, Salem County	5	.....	Do.
18	Edw. Archer, Daretown, Salem County	2	.....	Do.
18	Edw. Busby, Daretown, Salem County	13	.....	Do.
19	William W. Borton, Yorktown, Salem County	2	.....	Do.
19	Dutchman, Yorktown, Salem County	1	.....	Do.
19	John Wesley, Yorktown, Salem County	2	.....	Do.
19	William Richman, Yorktown, Salem County	6	.....	Do.
19	John Peacock, Yorktown, Salem County	5	.....	Do.
19	John S. Elwell, Yorktown, Salem County	14	.....	Do.
19	Aaron W. Hains, Yorktown, Salem County	5	.....	Do.
19	Isaac Sickler, Yorktown, Salem County	17	.....	Do.
19	Uz. Coles, Yorktown, Salem County	9	.....	Do.
19	John Mickel, Yorktown, Salem County	10	.....	Do.
19	Jacob Wise; Yorktown, Salem County	1	.....	Do.
19	Lewis Isaac, Yorktown, Salem County	6	.....	Do.
21	Austin & Pancoast, near Woodstown, Salem County	90	.....	Do.
22	William S. Richman, near Ballinger Mills, Salem County	24	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
Sept. 22	J. E. Craig, near Ballinger Mills, Salem County	13	.....	Good.
22	E. L. Sheppard, near Ballinger Mills, Salem County	13	.....	Do.
22	Henry S. Paulding, near Ballinger Mills, Salem County	5	.....	Do.
22	Suphen B. Ballinger, near Ballinger Mills, Salem County	6	.....	Do.
22	Mrs. M. Van Mater, Ballinger's Mills, Salem County	1	.....	Do.
22	Isaac Vanculin, near Ballinger's Mills, Salem County	2	.....	Do.
22	Isaac Van Mater, Ballinger's Mills, Salem County	1	.....	Do.
22	John B. Reeves, Ballinger's Mills, Salem County	8	.....	Do.
22	Clayton Smith, Ballinger's Mills, Salem County	9	.....	Do.
23	William Grice, sr., near Daretown, Salem County	5	.....	Do.
23	Sumton Curridan, near Daretown, Salem County	10	.....	Do.
23	Samuel Van Lier, near Daretown, Salem County	8	.....	Do.
23	William Swain, near Daretown, Salem County	6	.....	Do.
23	John Swain, near Daretown, Salem County	3	.....	Do.
23	Frank Dunham, near Daretown, Salem County	5	.....	Do.
23	Burrough Keene, near Daretown, Salem County	11	.....	Do.
23	Robert J. Summerill, near Daretown, Salem County	4	.....	Do.
23	James L. Summerill, near Daretown, Salem County	14	.....	Do.
23	Amos Heritage, near Daretown, Salem County	5	.....	Do.
23	Isaac J. Newkirk, near Daretown, Salem County	17	.....	Do.
23	George Johnson, near Daretown, Salem County	8	.....	Do.
23	Edwin Colson, near Daretown, Salem County	28	.....	Do,
24	George W. Fox, Watson's Corner, Salem County	12	.....	Do.
24	Isaiah Belle, Watson's Corner, Salem County	4	.....	Do.
24	Daniel Frieze, Watson's Corner, Salem County	5	.....	Do.
24	Joseph Haverill, Watson's Corner, Salem County	8	.....	Do.
24	Hiram Cuff, Watson's Corner, Salem County	14	.....	Do.
24	Samuel Ansing, Watson's Corner, Salem County	6	.....	Do.
24	Frank R. Keene, near Watson's Corner, Salem County	14	.....	Do.
24	Abner Aborn, near Watson's Corner, Salem County	14	.....	Do.
24	Henry J. Wentzell, near Watson's Corner, Salem County	5	.....	Do.
24	George Townsend, near Watson's Corner, Salem County	2	.....	Do.
24	Henry Jarman, near Watson's Corner, Salem County	8	.....	Do.
24	P. B. Wills, near Watson's Corner, Salem County	3	.....	Do.
24	Lydia Barber, near Watson's Corner, Salem County	6	.....	Do.
24	James Peacock, near Watson's Corner, Salem County	6	.....	Do.
24	William A. Chase, near Watson's Corner, Salem County	2	.....	Do.
24	Hill Smith, near Watson's Corner, Selem County	14	.....	Do.
25	Henry Johnson, near Woodstown, Salem County	1	.....	Do.
25	Samuel Pierson, near Yorktown, Salem County	2	.....	Do.
25	Margaret Williams, near Yorktown, Salem County	1	.....	Do.
25	Charles Sickler, near Yorktown Salem County	9	.....	Do.
25	Isaac Peacock, near Yorktown, Salem County	2	.....	Do.
25	Bernard Gordon, near Yorktown, Salem County	11	.....	Stables, good; animals, fair.
25	Daniel Evans, near Yorktown, Salem County	9	.....	Good.
25	Jonathan Wentzell, near Yorktown, Salem County	6	.....	Do.
25	Frank Keene, near Yorktown, Salem County	15	.....	Do.
25	John Drumons, near Yorktown, Salem County	17	.....	Do.
25	David H. Ware, near Yorktown, Salem County	6	.....	Do.
25	James Ray, near Yorktown, Salem County	21	.....	Do.
25	John E. Dorell, near Yorktown, Salem County	10	.....	Do.
25	Lewis James, near Yorktown, Salem County	2	.....	Do.
26	John Hanniss, near Woodstown, Salem County	15	.....	Stables, good; animals, fair.
26	Charles Reeve, near Woodstown, Salem County	1	.....	Good.
26	Charles Timmerman, near Woodstown, Salem County	1	.....	Do.
26	John Heil, near Woodstown, Salem County	13	.....	Do.
26	C. M. Miller, near Woodstown, Salem County	10	.....	Do.
26	Rebecca Ford, near Woodstown, Salem County	1	.....	Do.
26	George Smith, near Woodstown, Salem County	9	.....	Do.
26	Sara Ford, near Woodstown, Salem County	2	.....	Do.
26	Thomas Clark, near Woodstown, Salem County	6	.....	Do.
26	Thomas Hope, near Woodstown, Salem County	5	.....	Do.
26	William Aborn, near Woodstown, Salem County	2	.....	Do.
14	Stephen Gaston, near South Somerville, Somerset County	15	.....	Do.
14	John Voorhees, near South Somerville, Somerset County	28	.....	Do.
14	A. P. Munson, near South Somerville, Somerset County	15	.....	Do.
14	Peter Stafford, near South Somerville, Somerset County	61	.....	Do.
15	Aaron Timkins, near Bound Brook, Somerset County	120	.....	Do.
15	Striker Shirtze, near Bound Brook, Somerset County	35	.....	Do.
15	Samuel Martin, near Bound Brook, Somerset County	15	.....	Do.
16	John B. Stocks, near Plainfield, Union County	15	.....	Do.
16	James Sebric, near Plainfield, Union County	18	.....	Do.
16	James Vossler, near Plainfield, Union County	28	.....	Do.
16	Isaac Van Clear, near Dunellen, Union County	20	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
Sept. 16	N. Bennett, near Plainfield, Union County	15	.....	Good.
17	State Fair, Waverly, Essex County	....	.....	Do.
19	George Baker, near Linden, Union County	10	.....	Do.
19	A. W. Baker, near Linden, Union County	9	.....	Do.
19	M. Winans, near Linden, Union County	28	.....	Do.
19	Job Winans, near Linden, Union County	16	.....	Do.
19	F. Blank, near Linden, Union County	115	.....	Fair.
21	John Souley, near Irvington road, Essex County	15	.....	Good.
21	Orphan Asylum, near Irvington road, Essex County	9	.....	Do.
21	John Bowe, near Orange, Essex County	16	.....	Do.
21	George Bowen, near Orange, Essex County	25	.....	Do.
21	Ulrich Tublebuilder, near Orange, Essex County	20	.....	Do.
21	H. Handfield, near Orange, Essex County	19	.....	Do.
21	Jacob Hess, road to Orange, Essex County	18	.....	Do.
22	F. Muller, near Irvington, Essex County	14	.....	Do.
22	C. Tichner, near Irvington, Essex County	15	.....	Do.
22	James Van Ness, near Irvington, Essex County	15	.....	Do.
	Inspections by Rowland & Hawk, V. S.			
Sept. 22	Andrew Buras, near Irvington, Essex County	12	.....	Good.
22	R. Biphard, near Irvington, Essex County	15	.....	Do.
22	Charles Sletchner, near Irvington, Essex County	14	.....	Do.
22	Samuel Bliminson, near Irvington, Essex County	15	.....	Do.
22	M. Joshua, near Irvington, Essex County	12	.....	Do.
23	Aaron Ketner, near Neshanic, Hunterdon County	20	.....	Do.
23	John Hall, near Neshanic, Hunterdon County	15	.....	Do.
23	N. S. Gordon, near Flemington, Hunterdon County	14	.....	Do.
23	John W. Cline, near Flemington, Hunterdon County	25	.....	Do.
23	Harry Tooker, near Flemington, Hunterdon County	30	.....	Do.
24	William McIlhany, near Neshanic, Hunterdon County	....	.....	Do.
24	John Higgins, near Neshanic, Hunterdon County	20	2	Do.
24	Acker Higgins, near Neshanic, Hunterdon County	10	.....	Do.
24	Squire Higgins, near Neshanic, Hunterdon County	20	.....	Do.
24	Asher Sutton, near Flemington, Hunterdon County	....	.....	Do.
25	J. Maxfield, near Bloomfield, Essex County	104	.....	Very fine.
25	M. Pierson, near East Orange, Essex County	25	.....	Good.
25	Dennis Creston, near Orange, Essex County	12	.....	Do.
25	Unknown, near Orange, Essex County	26	.....	Do.
25	Timothy Larry, near Orange, Essex County	3	.....	Do.
25	Ralph Heighman, near Orange, Essex County	5	.....	Do.
25	Mrs. S. Nancy, near Orange, Essex County	4	.....	Do.
28	Christian Nugent, Newark Neck, Essex County	20	.....	Do.
28	P. Simons, Newark Neck, Essex County	15	.....	Do.
28	John Labe, Newark Neck, Essex County	5	.....	Do.
28	Charles Tearney, Newark Neck, Essex County	6	.....	Do.
28	Mike Murphy, Newark Neck, Essex County	7	.....	Do.
28	M. Kennedy, Newark Neck, Essex County	15	.....	Do.
28	John Hart, Newark Neck, Essex County	10	.....	Do.
29	Frank Rotan, near East Newark, Essex County	10	.....	Do.
29	Mrs. Sykes, near East Newark, Essex County	8	.....	Do.
29	Mrs. Winters, near East Newark, Essex County	8	.....	Do.
29	John Slegel, near East Newark, Essex County	18	.....	Do.
29	Anton Bavaller, near East Newark, Essex County	18	.....	Do.
29	Mrs. Shenwise, near East Newark, Essex County	8	.....	Do.
29	Frank Sunhowe, East Newark, Essex County	15	.....	Do.
29	Henry Gander, East Newark, Essex County	3	.....	Do.
29	August Cowfault, East Newark, Essex County	36	.....	Fair.
	Inspections by Miller & Dyer, V. S.			
Sept. 28	C. Ridgway, Vincentown, Burlington County	31	.....	Good.
28	Samuel Braim, Medford, Burlington County	18	.....	Do.
	Inspections by William B. E. Miller, V. S.			
Sept. 28	O. M. Powell, Pavonia, Camden County	1	1	Stables, fair; animal, very sick.
28	M. Feenfer, Pavonia, Camden County	7	.....	Good.
	Inspections by Miller & Dyer, V. S.			
Sept. 29	Alexander Cooper, Glendale, Camden County	52	.....	Good.
29	Robert Gould, Glendale, Camden County	1	.....	Stables, good; animals, very sick.
29	I. S. Reed, Near Woodstown, Salem County	14	.....	Good.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
Sept. 30	Joseph Lusby, near Woodstown, Salem County	3	.....	Good.
30	David Dickinson, near Woodstown, Salem County	7	.....	Do.
30	Henry W. Austin near Woodstown, Salem County	17	.....	Do.
30	Charles Gauntt, near Woodstown, Salem County	10	.....	Do.
30	Samuel Austin, near Woodstown, Salem County	10	.....	Do.
30	John Patrick, near Woodstown, Salem County	8	.....	Do.
30	John W. Thomas, near Woodstown, Salem County	2	.....	Do.
30	Black Crispen, near Woodstown, Salem County	19	.....	Do.
30	Edw. Hible, near Woodstown, Salem County	8	.....	Do.
30	Clinton Henry, near Woodstown, Salem County	1	.....	Do.
30	William Steward, near Woodstown, Salem County	2	.....	Do.
Oct. 1	Zac. Lively, near Woodstown, Salem County	2	.....	Do.
1	Thomas Hackett, near Woodstown, Salem County	5	.....	Do.
1	James Hackett, near Woodstown, Salem County	8	.....	Do.
1	John W. Hackett, near Woodstown, Salem County	11	.....	Do.
1	Charles Timberman, near Woodstown, Salem County	13	.....	Do.
1	A. Mowers, near Woodstown, Salem County	9	.....	Do.
1	David Harris, near Woodstown, Salem County	1	.....	Do.
1	J. D. Hillman, near Woodstown, Salem County	25	.....	Do.
1	John Hamilton, near Woodstown, Salem County	19	.....	Do.
1	James Gaffrey, near Woodstown, Salem County	23	.....	Do.
1	Edw. Halleven, near Woodstown, Salem County	5	.....	Do.
1	Joshua Reeves, near Woodstown, Salem County	18	.....	Do.
1	Joseph Ridgway, near Woodstown, Salem County	11	.....	Do.
1	Peter Ridgway, near Woodstown, Salem County	18	.....	Do.
1	David Elwell, near Woodstown, Salem County	15	.....	Do.
1	Davis Allen, near Woodstown, Salem County	24	.....	Do.
2	Samuel N. Rhoades, near Mount Ephraim, Camden County	37	2	Do.
3	Samuel Lippincott, near Acton Station, Salem County	22	.....	Do.
3	Martin Carney, near Acton Station, Salem County	1	.....	Do.
3	Oliver Smith, near Acton Station, Salem County	9	.....	Do.
3	Jonathan Bee, near Acton Station, Salem County	13	.....	Do.
3	William W. Acton, near Acton Station, Salem County	20	.....	Do.
3	Clement Acton, near Acton Station, Salem County	35	.....	Do.
3	Edw. Lawrence, near Acton Station, Salem County	26	.....	Do.
3	Clark Peditt, Mannington, Salem County	22	.....	Do.
3	James Peditt, Mannington, Salem County	3	.....	Do.
3	Peter Smith, Mannington, Salem County	16	.....	Do.
3	Woodnut Peditt, Mannington, Salem County	14	.....	Do.
3	David T. Grier, Mannington, Salem County	15	.....	Do.
3	Alfred B. Shute, Mannington, Salem County	27	.....	Do.
3	Jos. Smith, Mannington, Salem County	8	.....	Do.
3	Franklin P. Wallace, Mannington, Salem County	24	.....	Do.
3	Peter Crim, Mannington, Salem County	8	.....	Do.
5	Edw. Lippincott, near Auburn, Salem County	14	.....	Do.
5	M. Jordan, near Auburn, Salem County	11	.....	Do.
5	O. M. Powell, Pavonia, Camden County	1	.....	
5	E. W. Coffin, Glendale, Camden County	...	.....	
6	John T. Hughes, near Pole Tavern, Salem County	8	.....	Do.
6	John Pearson, near Pole Tavern, Salem County	9	.....	Do.
6	William M. Coles, near Pole Tavern, Salem County	32	.....	Do.
6	David Snellbaker, near Pole Tavern, Salem County	7	.....	Do.
6	Samuel White, near Pole Tavern, Salem County	9	.....	Do.
6	Thomas Brown, near Pole Tavern, Salem County	11	.....	Do.
6	Ael. Moore, near Pole Tavern, Salem County	13	.....	Do.
6	George Martin, near Pole Tavern, Salem County	...	.....	Do.
6	Mary Kelley, near Pole Tavern, Salem County	4	.....	Do.
6	M. Hulick, near Pole Tavern, Salem County	4	.....	Do.
6	A. Young, near Pole Tavern, Salem County	6	.....	Do.
6	William Avis, near Pole Tavern, Salem County	1	.....	Do.
6	William Grise, near Pole Tavern, Salem County	5	.....	Do.
6	R. Johnson, Woodstown, Salem County	1	.....	Do.
6	Charles Foster, Woodstown, Salem County	5	.....	Do.
6	Thomas Stretch, Woodstown, Salem County	7	.....	Do.
6	Charles Gray, Woodstown, Salem County	16	.....	Do.
6	Samuel D. Hickner, Woodstown, Salem County	3	.....	Do.
6	G. Kress, near Pole Tavern, Salem County	2	.....	Do.
6	Andrew Actner, near Pole Tavern, Salem County	1	.....	Do.
6	George Coles, near Pole Tavern, Salem County	5	.....	Do.
7	John Mahue, near Pole Tavern, Salem County	5	.....	Do.
7	Isaac Van Lier, near Pole Tavern, Salem County	15	.....	Do.
7	Albert Foster, near Pole Tavern, Salem County	6	.....	Do.
7	Thomas H. Burtt, near Pole Tavern, Salem County	10	.....	Do.
7	John Ackley, near Pole Tavern, Salem County	4	.....	Do.
7	Samuel Flitcraft, near Pole Tavern, Salem County	11	.....	Do.
7	A. G. Richer, near Pole Tavern, Salem County	10	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
Oct. 7	Harman Richman, near Pole Tavern, Salem County	12	.....	Good.
7	George Richman, near Pole Tavern, Salem County	11	.....	Do.
7	William Miller, near Pole Tavern, Salem County	3	.....	Do.
7	William Lawrence, near Whig Lane, Salem County	11	.....	Do.
7	Hiram Smith, near Whig Lane, Salem County	10	.....	Do.
7	Edw. Conover, near Whig Lane, Salem County	2	.....	Do.
7	Edward Kernes, near Whig Lane, Salem County	6	.....	Do.
7	A. R. Johnson, near Whig Lane, Salem County	9	.....	Do.
7	Mrs. Johnson, near Whig Lane, Salem County	1	.....	Do.
7	Peter Smith, near Acton Station, Salem County	.....	.....	
9	William Seagrave, road from Salem, Salem County	1	.....	Do.
9	Howard Peterson, road from Salem, Salem County	9	.....	Do.
9	James Wentzell, road from Salem, Salem County	13	.....	Do.
9	E. Atkinson, near Woodstown, Salem County	10	.....	Do.
9	Salem County almshouse, near Woodstown, Salem County	19	.....	Do.
9	William Austin, near Woodstown, Salem County	12	.....	Do.
9	Benjamin Didewson, near Woodstown, Salem County	8	.....	Do.
9	Henry Wolmantizer, road from Salem, Salem County	15	.....	Do.
9	Edward Reeves, near Woodstown, Salem County	30	.....	Do.
9	M. Garvey, near Woodstown, Salem County	10	.....	Do.
9	Richard Crisper, near Woodstown, Salem County	8	.....	Do.
9	Peter Magee, road from Salem, Salem County	16	.....	Do.
9	John Welch, road from Salem, Salem County	10	.....	Do.
9	Benjamin Lippincott, road from Salem, Salem County	7	.....	Do.
10	Shreve Robins, near Vincentown, Burlington County	25	5	Do.
12	Vaurom Rogers, near Windsor, Mercer County	23	.....	Fair.
	Inspections by Rowland & Hawk, V. S.			
Oct. 1	H. D. Oliphant, Orange Mountain, Essex County	10	.....	Good.
1	M. Anderson, Orange Mountain, Essex County	10	.....	Do.
1	M. Blackburn, Orange Mountain, Essex County	8	.....	Do.
1	S. McConnell, Orange Mountain, Essex County	3	.....	Do.
1	John McVerry, Second Mountain, Essex County	3	.....	Do.
1	John Cowan, Second Mountain Essex County	7	.....	Do.
1	Mrs. Carsons, near Orange, Essex County	5	.....	Do.
1	George Blaine, near Orange, Essex County	4	.....	Fair.
1	S. Miller, near Orange, Essex County	10	.....	Do.
2	Commons, near South Orange, Essex County	39	.....	Good.
2	F. O'Connor, near South Orange, Essex County	6	.....	Fair.
2	Catholic Institute, near South Orange, Essex County	15	.....	Good.
2	John W. Wordran, near South Orange, Essex County	18	.....	Do.
2	J. A. Oaklus, near South Orange, Essex County	24	.....	Fair.
3	Frank Ward, East Newark, Essex County	36	.....	Stables, fair; animals, good.
3	Thomas Doyle, East Newark, Essex County	18	.....	Do.
3	M. Kizer, East Newark, Essex County	4	.....	Do.
3	William Blake, East Newark, Essex County	7	.....	Fair.
3	George Kitch, East Newark, Essex County	5	.....	Do.
3	Jacob Kepler, East Newark, Essex County	12	.....	Do.
5	Mrs. General Halstead, near Arlington, Essex County	18	.....	Do.
5	Mrs. Roach, near Arlington, Essex County	25	.....	Good.
5	Mr. Sandford, near Arlington, Essex County	5	.....	Do.
5	Commons, near Arlington, Essex County	15	.....	Do.
5	George Miller, near East Newark, Essex County	12	.....	Do.
5	Mrs. S. Mares, near East Newark, Essex County	8	.....	Fair.
5	Mrs. J. Rider, near East Newark, Essex County	9	.....	Good.
5	S. M. Davis, near East Newark, Essex County	5	.....	Do.
6	M. Torpie, near Hoboken, Hudson County	16	.....	Fair.
6	N. Warrington, near Hoboken, Hudson County	12	.....	Do.
6	H. Muller, near Hoboken, Hudson County	12	.....	Stables, fair; animals, good.
6	E. Baeks, near Weehawken, Hudson County	3	.....	Do.
6	P. Dickle, near Weehawken, Hudson County	13	.....	Do.
6	S. Fook, near Weehawken, Hudson County	15	.....	Good.
7	H. Johnson, near Guttenburg, Hudson County	28	.....	Stables, fair; animals, good.
7	Commons, near Guttenburg, Hudson County	35	.....	Good.
7	Alex. McClellan, near Guttenburg, Hudson County	38	.....	Do.
7	M. Fink, near Guttenburg, Hudson County	7	.....	Do.
7	S. Blain, Union Hill, Hudson County	10	.....	Stables, fair; animals, good.
7	William Fink, Union Hill, Hudson County	6	.....	Good.
7	Mrs. Peacots, Union Hill, Hudson County	5	.....	Fair.
9	George Sabins, Union Hill, Hudson County	9	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Rowland & Hawk, V. S.—Continued.			
1885.				
Oct. 9	A. Kinsley, Union Hill, Hudson County	14	.....	Stables, filthy; animals, fair.
9	Charles Beckmire, Union Hill, Hudson County	12	.....	Fair.
9	M. Sterns, Union Hill, Hudson County	8	.....	Do.
9	M. Teel, Union Hill, Hudson County	7	.....	Good.
9	C. Asfelix, Union Hill, Hudson County	20	.....	Stables, not good; animals, good.
10	John Agen, Guttenburg, Hudson County	16	.....	Fair.
10	Mrs. Mooney, Guttenburg, Hudson County	16	.....	Do.
10	Alex. Clement, Guttenburg, Hudson County	15	.....	Good.
10	Mike Colyer, Guttenburg, Hudson County	30	.....	Do.
10	William A. Wood, near Fort Lee, Hudson County	35	.....	Do.
10	Charles McMichael, near Fort Lee, Hudson County	15	.....	Do.
10	H. Billings, near Fort Lee, Hudson County	4	.....	Do.
	Inspections by Miller & Dyer, V. S.			
Oct. 13	Mr. Phillips, near Mannington, Salem County	3	.....	Good.
13	Jos. Newall, near Mannington, Salem County	23	.....	Do.
13	Richard Thompson, near Mannington, Salem County	14	.....	Do.
13	J. Levi Smithe, near Mannington, Salem County	12	.....	Do.
13	Josiah Mitchell, near Mannington, Salem County	12	.....	Do.
13	Elias Buyby, near Mannington, Salem County	28	.....	Do.
13	Casper W. Acton, near Mannington, Salem County	32	.....	Do.
13	Mrs. S. L. J. Miller, near Mannington, Salem County	13	.....	Do.
13	Wyatt W. Miller, near Mannington, Salem County	70	.....	Do.
13	Josiah Miller, near Mannington, Salem County	24	.....	Do.
13	Patrick Halliken, near Mannington, Salem County	8	.....	Do.
13	Edward W. Lippincott, near Mannington, Salem County	22	.....	Do.
13	J. B. Greer, near Mannington, Salem County	10	.....	Do.
13	J. Dawson, near Mannington, Salem County	22	.....	Do.
14	W. H. Reeves, near Mannington, Salem County	12	.....	Do.
14	Frank White, near Salem, Salem County	6	.....	Do.
14	Samuel Pryor, near Salem, Salem County	12	.....	Do.
14	James C. Pancoast, near Salem, Salem County	22	.....	Do.
14	David Sparks, near Salem, Salem County	5	.....	Do.
14	James Dummond, near Salem, Salem County	14	.....	Do.
14	Henry Lloyd, near Salem, Salem County	15	.....	Do.
14	David A. Fogg, near Salem, Salem County	9	.....	Do.
14	Albert Bassett, near Salem, Salem County	13	.....	Do.
14	John M. Rollin, near Salem, Salem County	23	.....	Do.
14	J. Warren Smith, near Salem, Salem County	15	.....	Do.
14	Charles Zelly, near Salem, Salem County	10	.....	Do.
14	S. B. Carpenter, near Salem, Salem County	20	.....	Do.
14	Robert Newall, near Salem, Salem County	24	.....	Do
15	Shreve Robins, near Vincentown, Burlington County	24	4	Do.
	Inspections by Rowland & Hawk, V. S.			
Oct. 12	A. Christopher, near Englewood, Bergen County	6	.....	Good.
12	Commons, near Englewood, Bergen County	15	.....	Do.
12	P. Brady, near Englewood, Bergen County	14	.....	Fair
12	H. W. Calombo, Englewood, Bergen County	5	.....	Stables, filthy; animals, fair.
12	Symen Nass, near Englewood, Bergen County	7	.....	Good.
12	F. Naedler, near New Durham, Bergen County	15	.....	Do.
12	S. H. Greenleaf, near New Durham, Bergen County	6	.....	Do.
12	S. Johnson, near Englewood, Bergen County	8	.....	Do.
12	Henry Vinchers, near Englewood, Bergen County	19	.....	Do.
12	J. Personends, near Englewood, Bergen County	12	.....	Do.
13	John Nebby, near Englewood, Bergen County	6	.....	Fair
13	Nicholas Jacobus, near Ridgefield, Bergen County	10	.....	Good.
13	M. Callan, near Englewood, Bergen County	7	.....	Do.
13	Joseph Nebbings, near Englewood, Bergen County	21	.....	Do.
13	Maryella Hempton, near Englewood, Bergen County	12	.....	Fair.
13	T. Chapman, near Englewood, Pergen County	10	.....	Good.
13	N. Morse, near Englewood, Bergen County	6	.....	Do.
13	S. Brooks, near Englewood, Bergen County	5	.....	Fair.
14	H. Fenbergen, near Secaucus, Hudson County	101	.....	Stables, filthy; animals, fair.
14	—— Litherman, near Secaucus, Hudson County	85	.....	Do.
14	J. C. Voss, near Hoboken, Hudson County	18	.....	Fair.
16	A. Gubsod, near Pine Brook, Essex County	13	.....	Good.
16	S. E. Fich, near Pine Brook, Essex County	12	.....	Do.
16	M. Himple, near Pine Brook, Essex County	10	.....	Do.
16	M. Chapman, near Pine Brook, Essex County	12	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Rowland & Hawk, V. S.—Continued.			
1885.				
Oct. 16	S. Morse, near Pine Brook, Essex County	6	.....	Fair.
16	S. M. Brooks, near Pine Brook, Essex County	5	.....	Good.
16	V. Webber, near Pine Brook, Essex County	16	.....	Do.
16	S. Shager, near Pine Brook, Essex County	14	.....	Fair.
17	William O'Callahan, near Pine Brook, Essex County	136	30	
19	J. Marsh, near Bloomsburg, Essex County	25	.....	Good.
19	Joe Ross, near Bloomsburg, Warren County	29	.....	Do.
19	G. Cole, near Bloomsburg, Warren County	10	.....	Do.
19	H. Philips, near Bloomsburg, Warren County	18	.....	Do.
20	M. Harrins, Bloomsburg, Warren County	30	.....	Do.
20	M. Haddleson, near Bloombsburg, Warren County	39	.....	Do.
20	French Nesh, near Bloomsburg, Warren County	25	.....	Do.
22	Charles Hoe, East Brunswick, Middlesex County	....	.....	
23	Jackson Sattlif, near Newark, Essex County	10	.....	Do.
23	John Caezer, near Newark, Essex County	17	.....	Do.
23	William Cogan, near Newark, Essex County	12	.....	Fair.
23	S. Olders, near Newark, Essex County	13	.....	Good.
23	M. Stovers, near Newark, Essex County	25	.....	Do.
24	William Nullty, near North Newark, Essex County	50	.....	Do.
24	J. Noonan, near North Newark, Essex County	13	.....	Fair.
24	J. Kerst, near North Newark, Essex County	6	.....	Do.
24	S. Clincher, near North Newark, Essex County	15	.....	Good
24	J. Candfield, near Newark, Essex County	6	.....	Do.
24	N. Sheppard, near North Newark, Essex County	9	.....	Do.
26	Joseph Tingley, near Orange, Essex County	12	.....	Do.
26	Nelson Ponser, near Orange, Essex County	14	.....	Do.
26	P. S. Lord, near Orange Mountain, Essex County	80	.....	Do.
26	Mrs. Starks, near Orange Mountain, Essex County	12	.....	Do.
26	Mrs. Brumnell, near Orange Mountain, Essex County	10	.....	
28	Joseph Force, near Plainfield, Somerset County	15	.....	Do.
28	M. Steel, near Plainfield, Somerset County	26	.....	Fair.
28	Daniel Cole, near Plainfield, Somerset County	26	.....	
28	Harry Little, near Dunnella, Somerset County	15	.....	Good.
28	D. Miller, near Dunnella, Somerset County	18	.....	Do.
29	John Geasy, near Bound Brook, Somerset County	15	.....	Fair.
29	L. M. Roecap, near Bound Brook, Somerset County	7	.....	Good.
29	Isaac Randolph, near Bound Brook, Somerset County	16	.....	Do.
29	A. Gaddis, near Bound Brook, Somerset County	13	.....	Do.
29	John Lebring, near Bound Brook, Somerset County	8	.....	Do.
30	S. Cook, near Somerville, Somerset County	20	.....	Fair.
30	C. Bammett, near Somerville, Somerset County	25	.....	Good.
30	S. Black, near Somerville, Somerset County	10	.....	Do.
30	M. Landores, near Somerville, Somerset County	35	.....	Fair.
30	J. Herring, near Somerville, Somerset County	16	.....	Good.
31	John Ealy, near Somerville, Somerset County	9	.....	Fair.
31	William Doyle, near Somerville, Somerset County	15	.....	Good.
31	L. Ealy, near Somerville, Somerset County	17	.....	Fair.
31	S. Martin, Finderne, Somerset County	15	.....	Good.
31	John Vandevere, Somerville, Somerset County	10	.....	
31	Jacob Smith, near Somerville, Somerset County	14	.....	Do.
31	G. V. Van Ness, Finderne, Somerset County	15	.....	Do.
31	S. Bowers, near Somerville, Somerset County	10	.....	Do.
31	John Frazy, near Somerville, Somerset County	9	.....	Do.
31	William Hamilton, near Somerville, Somerset County	85	.....	Do.
Nov. 2	J. Baitman, near Bound Brook, Somerset County	25	.....	
2	James Jones, near Bound Brook, Somerset County	7	.....	
2	M. Cadmus, near Bound Brook, Somerset County	20	.....	
3	M. Van Pelt, Finderne, Somerset County	4	.....	
3	S. Cornell, Finderne, Somerset County	16	.....	Fair.
3	John C. Shea, near Finderne, Somerset County	7	.....	Good.
3	M. Coulses, near Finderne, Somerset County	18	.....	Fair.
3	John H. Lord, near Finderne, Somerset County	15	.....	Good.
5	John Beal, near Somerville, Somerset County	17	.....	Do.
5	Mrs. Muhn, near Somerville, Somerset County	25	.....	Do.
5	Jennis A. Lowe, near Somerville, Somerset County	30	.....	Do.
5	John Kinsley, near Somerville, Somerset County	29	.....	Do.
5	J. V. Shill, near Somerville, Somerset County	9	.....	Fair.
6	Aaron Thompson, near Somerville, Somerset County	126	.....	Good.
6	Peter Garretsen, near Somerville, Somerset County	14	.....	
6	Ben. Bainey, near Somerville, Somerset County	12	.....	Fair.
7	Jones Brothers, White House, Somerset County	29	.....	Good.
7	E. Gerhart, White House, Somerset County	40	.....	Do.
7	Pickle Brothers, White House, Somerset County	98	.....	Do.
7	Thomas Austin, White House, Somerset County	12	.....	Do.
9	John Vassler, near Bound Brook, Somerset County	10	.....	Fair.
9	D. S. Shultz, near Bound Brook, Somerset County	12	.....	Good.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Rowland & Hawk, V. S.—Continued.			
1885.				
Nov. 9	S. Robins, near Bound Brook, Somerset County	9	.....	Fair.
9	M. Lane, near Bound Brook, Somerset County	13	.....	Good.
9	Rafe Young, near Bound Brook, Somerset County	15	.....	Fair
9	Burr Tucker, near Bound Brook, Somerset County	8	.....	Do.
10	J. Caezer, near Bound Brook, Somerset County	14	.....	Good.
10	Barney Farmer, near Bound Brook, Somerset County	22	.....	Fair
12	S. Hudenburg, near Raritan, Somerset County	7	.....	Good.
12	Arthur Tahper, near Raritan, Somerset County	8	.....	Fair.
12	C. B. Ransome, near Raritan, Somerset County	75	.....	Good.
12	Samuel Knapp, near Raritan, Somerset County	20	.....	Fair.
13	M. Demont, near Bound Brook, Somerset County	8	.....	Do.
13	S. Vulture, near Bound Brook, Somerset County	15	.....	Good.
13	J. Moore, near Bound Brook, Somerset County	12	.....	Fair.
13	J. Scholerich, near Bound Brook, Somerset County	14	.....	Do.
13	J. Slingerman, near Somerville, Somerset County	40	.....	Do.
14	J. McIntosh, near Somerville, Somerset County	10	.....	Do.
14	S. Reed, near New Brunswick, Somerset County	9	.....	Good.
14	P. Brown, near New Brunswick, Somerset County	6	.....	Do.
14	Pat. Coan, near New Brunswick, Somerset County	29	.....	Fair.
14	S. Donohue, near New Brunswick, Somerset County	10	.....	Good.
14	J. Dillegan, near New Brunswick, Somerset County	10	.....	Fair.
14	M. Van Cleaf, near New Brunswick, Somerset County	4	.....	Good.
14	S. Hone, near New Brunswick, Somerset County	6	.....	Do.
16	S. Conover, Peapack, Somerset County	13	.....	Do.
17	John Sell, Peapack, Somerset County	9	.....	Do.
17	S. Dalley, Peapack, Somerset County	10	.....	Do.
17	S. Van Devender, Peapack, Somerset County	13	.....	Do.
17	J. Nolan, near Peapack, Somerset County	25	.....	Do.
17	James Pickle, near Peapack, Somerset County	14	.....	Do.
17	John H. Vann, near Peapack, Somerset County	16	.....	Do.
18	George Ballentine, Peapack, Somerset County	13	.....	Do.
18	Elias Phithiver, Peapack, Somerset County	12	.....	Fair.
18	Ellis Tager, Peapack, Somerset County	9	.....	Good.
18	Lewis Van Devender, Peapack, Somerset County	8	.....	Do.
18	Theo. Trimmer, Peapack, Somerset County	10	.....	Do.
20	S. T. Vanmule, near Millstown, Middlesex County	10	.....	Do.
20	Commons, near Millstown, Middlesex County	21	.....	Do.
20	Henry Howe, near Millstown, Middlesex County	29	.....	Do.
20	S. M. Powell, near Millstown, Middlesex County	26	.....	Do.
20	S M. Howard, near Millstown, Middlesex County	36	.....	Fair.
21	Samuel Stell, near Pesqualavy, Middlesex County	12	.....	Good.
21	Dunham Runyen, near Pesqualavy, Middlesex County	10	.....	Do.
21	M. Randolph, near Pesqualavy, Middlesex County	18	.....	Do.
21	P. Letson, near Stelton, Middlesex County	13	.....	Do.
21	J. Buttler, near Stelton, Middlesex County	8	.....	Do.
23	S. Mettler, near New Brunswick, Middlesex County	10	.....	Do.
23	S. Vannuele, near New Brunswick, Middlesex County	14	.....	Fair.
23	J. S. Miller, near New Brunswick, Middlesex County	9	.....	Good.
23	S. Holbert, near New Brunswick, Middlesex County	13	.....	Do.
23	E. E. Smalley, near New Brunswick, Middlesex County	18	.....	Stables, filthy; animals, terrible.
23	T. McBride, near New Brunswick, Middlesex County	9	.....	Good.
24	James Brunster, near Woodbridge, Middlesex County	20	.....	Do.
24	H. Demarest, near Woodbridge, Middlesex County	4	.....	Do.
24	S. Prall, near Woodbridge, Middlesex County	18	.....	Do.
24	J. S. Siminson, near Woodbridge, Middlesex County	26	.....	Do.
27	Steven Simons, near Perth Amboy, Middlesex County	18	.....	Stables, fair; animals, good.
27	H. Sanderson, near Perth Amboy, Middlesex County	15	.....	Good.
27	E. Morris, near Perth Amboy, Middlesex County	26	.....	Do.
27	Steve Steany, near Perth Amboy, Middlesex County	14	.....	Stables, fair; animals, good.
27	John McCloskey, near Perth Amboy, Middlesex County	5	.....	Fair.
28	William Thomall, near Perth Amboy, Middlesex County	16	.....	Stables, fair; animals, good.
28	H. Anderson, near Perth Amboy, Middlesex County	9	.....	Fair.
28	C. Patterson, near Perth Amboy, Middlesex County	20	.....	Good.
28	S. Simpson, near Perth Amboy, Middlesex County	14	.....	Fair.
28	Arthur Hope, near Perth Amboy, Middlesex County	13	.....	Not good.
28	S. M. Matson, near Perth Amboy, Middlesex County	10	.....	Fair.
30	Peter Hosler, near Guttenburg, Middlesex County	4	.....	Stables, filthy; animals, good.
30	Andrew Deer, near Guttenburg, Middlesex County	6	.....	Stables, filthy; animals, fair.
30	John Miller, near Union Hill, Middlesex County	8	.....	Do.
30	William Fink, near Guttenburg, Middlesex County	7	2	Filthy.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Rowland & Hawk, V. S.—Continued.			
1885.				
Dec. 1	——— Litherman, near Secaucus, Hudson County	102	.....	Fair.
1	M. Feinberger, near Secaucus, Hudson County	120	.....	Stables, filthy; animals, fair.
1	George Harmes, near Secaucus, Hudson County	9	.....	Fair.
3	Stephen Casey, Bergen Point, Hudson County	7	.....	Not good.
3	S. Caunker, Bergen Point, Hudson County	15	.....	Stables, filthy; animals, fair.
3	John Hanner, Bergen Point, Hudson County	9	1	
4	John Murray, Greenville, Hudson County	14	.....	Do.
4	Louis Conniff, near Greenville, Hudson County	7	.....	Do.
4	Frank Wooler, near Pamrapo, Hudson County	24	.....	Fair.
4	John Meany, near Greenville, Hudson County	4	1	Stables, fair; animals, poor.
5	Mich. Torpey, Hoboken, Hudson County	15	.....	Fair.
5	Pat. Mooney, Hoboken, Hudson County	10	.....	Stables, good; animals, fair.
5	Mrs. S. Torpey, Hoboken, Hudson County	15	.....	Fair.
5	H. Muller, Hoboken, Hudson County	15	.....	Good.
5	S. Folk, Hoboken, Hudson County	13	.....	Do.
5	P. Dickle, Hoboken, Hudson County	10	.....	Fair.
5	John Wilson, Hoboken, Hudson County	8	.....	Good.
5	William Warrington, Hoboken, Hudson County	10	.....	Fair.
7	Charles Beckmire, Union Hill, Hudson County	14	.....	Stables, filthy; animals, fair.
7	George Sabine, Union Hill, Hudson County	7	.....	Do.
7	A. Kinsley, Union Hill, Hudson County	15	.....	Fair.
7	M. Teel, Hoboken, Hudson County	9	.....	Do.
7	C. Asfelix, Union Hill, Hudson County	22	.....	Do.
8	John Cochcler, Jersey City Heights, Hudson County	8	.....	Do.
8	Pat. Coyle, Jersey City Heights, Hudson County	27	.....	Filthy.
8	George Vail, Jersey City Heights, Hudson County	8	.....	Fair.
8	John Helmke, Jersey City Heights, Hudson County	9	.....	Stables, filthy; animals, fair.
11	W. H. Brockwell, Marion, Hudson County	30	1	Not good.
11	George Flagenstine, Marion, Hudson County	13	.....	Fair.
11	J. Kretze, Marion, Hudson County	10	.....	Good.
11	John Engle, Marion, Hudson County	7	.....	Do.
11	T. Melitz, near Marion, Hudson County	6	.....	Fair.
11	M. E. Brocher, near Marion, Hudson County	3	.....	Good.
12	M. Blacker, Greenville, Hudson County	17	.....	Fair.
12	John Lynch, near Greenville, Hudson County	19	.....	Very filthy.
12	F. Eulitz, near Greenville, Hudson County	18	.....	Good.
15	F. Blank, near Linden, Union County	76	.....	Do.
15	John Miller, Newark, Essex County	10	.....	Do.
16	M. Spuddler, Newark, Essex County	15	.....	Fair.
16	M. Stronce, near Newark, Essex County	12	.....	Stables, filthy; animals, fair.
16	S. Hill, South Newark, Essex County	20	.....	Stables, fair; animals, good.
17	Jacob Kester, near Franklin, Essex County	9	.....	Good.
17	George Stayer, Franklin, Essex County	12	.....	Do.
17	Ben. Marsh, Franklin, Essex County	15	.....	Stables, fair; animals, good.
17	S. Hullmaster, Franklin, Essex County	13	.....	Good.
18	H. Currier, near Newark, Essex County	15	.....	Fair.
18	Barney Sterns, Newark, Essex County	35	.....	Good.
18	Henry Gender, Newark, Essex County	3	.....	Do.
18	Philip Simons, Newark, Essex County	15	.....	Fair.
18	Christian Nugent, Newark, Essex County	20	.....	Good.
21	Barney Farmer, Bound Brook, Somerset County	18	1	Fair.
21	E. Shee, Bound Brook, Somerset County	2	.....	Do.
21	William Flinn, Bound Brook, Somerset County	2	.....	Do.
21	John Fantz, Bound Brook, Somerset County	10	.....	Do.
23	James Mulligan, near Waverly, Essex County	16	.....	Stables, fair; animals, good.
23	S. Lewison, near Waverly, Essex County	15	.....	Fair.
23	William Philperton, near Waverly, Essex County	28	.....	Good.
23	C. Kesto, near Waverly, Essex County	19	.....	Do.
24	W. H. Marcillo, Lyons Farms, Union County	49	.....	Fair.
24	Day Brothers, Lyons Farms, Union County	28	.....	Good.
24	William Parker, Lyons Farms, Union County	14	.....	Fair.
24	John Ballots, Lyons Farms, Union County	22	.....	Do.
26	Jackson Scotliff, near Newark, Essex County	10	.....	Good.
26	John Cuzan, near Newark, Essex County	17	.....	Fair.
26	William Cuzan, near Newark, Essex County	12	.....	Do.

Inspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Rowland & Hawk, V. S.—Continued.			
1885.				
Dec. 26	William Muelty, near Newark, Essex County	50	.....	Stables, fair; animals, good,
26	J. Numans, near Newark, Essex County	18	.....	
26	J. W. Keiser, near Newark, Essex County	19	.....	Fair.
28	M. Winans, Linden, Union County	29	.....	Good.
28	George Baker, near Linden, Union County	9	.....	Do.
28	William Baker, near Linden, Union County	12	.....	Do.
28	Job Winans, near Linden, Union County	18	.....	Do.
28	John Mullan, near Elizabeth, Essex County	19	.....	Do.

Reinspections in New Jersey.

	Inspections by Rowland & Hawk, V. S.			
1884.				
Dec. 29	C. Alfelix, Guttenburg, Hudson County	....	5	Stables, filthy; animals, bad.
	Inspections by W. B. E. Miller, V. S.			
29	George Reed, Germania avenue, Jersey City	4	1	Fair.
29	John Estell, Ocean avenue, Jersey City	28	.....	Good.
29	Chetwood Estell, Kearney avenue, Jersey City	13	.....	Do.
29	Owen Shannon, Virginia avenue, Jersey City	2	1	Fair.
30	Mrs. Rush, Edge avenue, Jersey City	....	.....	
30	Mrs. Bergman, Edge avenue, Jersey City	2	.....	Do.
30	Mrs. Martin, Atlantic avenue, Jersey City	....	.....	
30	Jacob Kepler, Jackson lane, Jersey City	13	.....	Good.
30	Luke Conneof, Walker avenue, Jersey City	9	.....	Do.
30	Stephen Casey, Walker avenue, Jersey City	7	.....	Fair.
31	Patrick Coyle, Bevins street, Jersey City	11	.....	Do.
31	Bernard Orveil, 213 Brittain street, Jersey City	10	3	Filthy.
31	Lawrence Cullen, West Side avenue, Jersey City	15	.....	Fair.
31	John Cullen, 894 Montgomery street, Jersey City	....	.....	
31	F. W. Grible, 30th street and Sixth avenue, Jersey City	12	2	Do.
1885.				
Jan. 1	William S. Taylor, Burlington, Burlington County	....	.....	Stable, good; animals, indifferent.
	Inspections by Rowland & Hawk, V. S.			
1	F. E. Nilitz, Marion, Hudson County	....	2	Stables, filthy; animals, bad.
	Inspections by W. B. E. Miller, V. S.			
Jan. 24	Lobdell Car Wheel Co., S. Wilmington, New Castle County	58	12	Good.
26	Edgemoor Iron Company, Edgemoor, New Castle County	67	{*8 †14}	Do.
29	Lobdell Car Wheel Co., S. Wilmington, New Castle County	55	10	Do.
	Inspections by Rowland & Hawk, veterinary surgeons.			
Feb. 3	C. Asfelix, West New York, Hudson County	18	5	Very bad.
4	S. Kolowsky, Secaucus, Hudson County	....	.....	Do.
4	—— Litherman, Secaucus, Hudson County	68	.....	Good.
4	Patrick Folly, Hoboken, Hudson County	....	.....	Not good.
Mar. 9	C. Asfelix, West New York, Hudson County	17	2	Bad.
20	.....do	....	2	Not good.
	Inspections by Miller & Dyer, V. S.			
May 30	M. Fennfer, Pavonia, Camden County	9	.....	
June 6	.....do	7	1	Stables, good; animals, fair.
13	.....do	....	.....	
13	S. Levi Jones, Lumberton, Burlington County	....	.....	
Aug. 24	M. Fennfer, Pavonia, Camden County	7	.....	Good.
24	Samuel N. Rhoades, Mount Ephraim, Camden County	37	.....	Do.
24	S. Levi Jones, Lumberton, Burlington County	5	.....	Do.
24	Samuel J. Branin, Medford, Burlington County	18	.....	Do.
24	Caleb Ridgway, Vincentown, Burlington County	31	.....	Do.
Sept. 5	M. Fennfer, Pavonia, Camden County	7	1	Do.
5	Alex. Cooper & Son, Ashland, Camden County	44	.....	Do.

*Acute. †Chronic.

Reinspections in New Jersey—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by Miller & Dyer, V. S.—Continued.			
1885.				
Sept. 12	Samuel Branin, Medford, Burlington County	18	.....	Good.
12	S. Levi Jones, Medford, Burlington County	6	.....	Do.
12	William Johnson, Turkey, Monmouth County	7	.....	Do.
28	Samuel Branin, Medford, Burlington County	18	.....	Do.
29	Alex. Cooper, Glendale, Camden County	52	.....	Do.
29	Robert Gould, Glendale, Camden County	1	.....	Stables, good; animal, sick.
Oct. 2	Samuel N. Rhoades, near Mount Ephraim, Camden County	37	2	Good.
5	E. W. Coffin, Glendale, Camden County	.....	.....	
5	M. Fennfer, Pavonia, Camden County	7	.....	
5	O. M. Powell, Pavonia, Camden County	.....	.....	
5	M. Jorden, near Auben, Salem County	11	.....	
5	Edw. Lippincott, Salem County	.....	.....	
15	Shreve Robins, Vincentown, Burlington County	24	4	Do.
	Inspections by Rowland & Hawk, V. S.			
Nov. 16	Barry Farmer, Bound Brook, Somerset County	.....	.....	Fair.

Inspections of abattoirs in New Jersey.

	Inspections by Rowland & Hawk, V. S.			
1885.				
Feb. 7	Abattoir, Jersey City, Hudson County	.....	.....	Good.
18	.....do	.....	3	Do.
24	Abattoir, Jersey City stock-yards, Hudson County	.....	.....	Do.
Mar. 6	.....do	.....	1	Do.
6	.....do	.....	.....	Do.
18	Abattoir, Jersey City	.....	.....	Do.
25	.....do	.....	.....	Do.
Apr. 2	Abattoir, Jersey City stock-yards, Essex County	.....	.....	Do.
11	Pavonia Ferry, Jersey City stock-yards, Hudson County	.....	.....	Do.
17	.....do	.....	.....	Do.
22	.....do	4	.....	Do.
22	Abattoir, Jersey City stock-yards, Hudson County	.....	.....	Do.
	Inspections by J. W. Hawk, V. S.			
May 7	Abattoir, Jersey City stock-yards, Hudson County	.....	.....	Good.
14	.....do	.....	.....	Do.
20	.....do	.....	.....	Do.
29	.....do	.....	.....	Do.
June 18	.....do	.....	.....	Do.
26	.....do	.....	.....	Do.
	Inspections by Rowland & Hawk, V. S.			
July 8	Abattoir, Jersey City stock-yards, Hudson County	.....	.....	Good.
15	.....do	.....	.....	Do.
22	.....do	.....	.....	Do.
31	.....do	.....	.....	Do.
Aug. 6	.....do	.....	.....	Do.
13	.....do	.....	.....	Do.
20	.....do	.....	.....	Do.
26	.....do	.....	.....	Do.
Sept. 5	.....do	.....	.....	Do.
12	.....do	.....	.....	Do.
18	.....do	.....	.....	Do.
26	Abattoir, Jersey City, Hudson County	.....	.....	Do.
30	.....do	.....	.....	Do.
Oct. 15	Stock-yards, Jersey City, Hudson County	.....	.....	Do.
21	.....do	.....	.....	Do.
27	.....do	.....	.....	Do.
Nov. 4	.....do	.....	.....	Do.
11	.....do	.....	.....	Do.
19	.....do	.....	.....	Fair and good.
25	.....do	.....	.....	Good.
Dec. 2	.....do	.....	.....	Do.
9	.....do	.....	.....	Do.
14	.....do	.....	.....	Do.
22	.....do	.....	.....	Do.
29	Cunningham Ferry, Jersey City, Hudson County	.....	.....	Do.
30	Desbrosses Ferry, Jersey City, Hudson County	.....	.....	Do.
31	Hoboken Ferry, Jersey City, Hudson County	.....	.....	Do.

Inspections in Delaware.

Day of month.	Name of owner or person in charge and location of stable.	No of cattle.	No. with lung-plague.	Condition.
	Inspections by Miller & Dyer, V. S.			
1885.				
Jan. 20	H. C. Mahaffy, near Wilmington, New Castle County	17	.....	Good
20	Edgemore Iron Company, Edgemoor, New Castle County	68	{ 8a. { 14c.	{ Stables, fair; animals, good.
20	J. W. Banks, Riverside, New Castle County	17	2	Good.
21	Lobdell Car Wheel Co., South Wilmington, New Castle Co.	58	8c.	Do.
22	H. M. Barlow, road to Wilmington, New Castle County	17	.....	Do.
23	Edward Wilson, road to Wilmington, New Castle County	20	.....	Do.
23	Daniel Bradley, near Wilmington, New Castle County	12	.....	Do.
24	William Hall, Wilmington post-office, New Castle County	15	.....	Do.
24	Charles S. Robinson, Wilmington post-office, New Castle Co.	35	.....	Do.
24	Lobdell Car Wheel Co., South Wilmington, New Castle Co.	58	10c.	Do.
26	John Aulman, Edgemoor, New Castle County	25	.....	Do.
29	Alfred M. Leach, near South Wilmington, New Castle County.	25	.....	Do.
	Inspections by W. B. Rowland, V. S.			
Aug. 5	George White and Mrs. Andrew, Castle Hundred, New Castle County.	25	13c.	Fair.
6	John and William Boyd, Claymont, New Castle County	9	1c.	Do.
7	Matthew Rylott, Edgemoor, New Castle County	18	.....	Good.
8	Edgmoor Iron Company, Edgmoor, New Castle County	77	9c.	Do.
10	Nicholas Garrett, Beaver Valley, New Castle County	17	1c.	Stables, fair; animals, good.
11	Ellis Hicks, Christiana Hundred, New Castle County	24	5c.	Good.
14	John Banker, Brandywine Hundred, New Castle County	15	3	Do.
17	W. R. Mousley, near Brandywine Hundred, New Castle Co.	17	1c.	Do.
Sept. 15	Lobdell Car Wheel Company, New Castle Hundred, New Castle County.	27	.....	Do.
16	John and Frank McCauley, New Castle Hundred, New Castle County.	21	.....	Do.
Aug. 24	Mr. Foster, Christiana Hundred, New Castle County	1	.....	
Sept. 30	Meggirison and L. G. Carr, Brandywine Hundred, New Castle County.	28	.....	Stables, poor; animals, fair.

Inspections in Maryland.

	Inspections by W. H. Rose, V. S.			
1885.				
Dec. 23	Wallace King, Green Spring road, Baltimore County, Md	9	3	
23	C. W. League, Green Spring road, Baltimore County, Md	.....	.....	
23	J. C. Dorsey & Co., near Hookstown, Baltimore County, Md.	63	4c.	
23	George French, Hookstown, Baltimore County, Md	19	2c.	
24	William C. Wood, Charles st. av., Baltimore County, Md	20	6c.	
24	Burke & Bradford, Charles st. av., Baltimore County, Md	3	{ 1s. { 2c.	
26	Mr. Ruhl, Govanstown, Baltimore County, Md	21	(*)	
28	David Stevens, near Woodberry, Baltimore County, Md	65	5c.	
28	Mr. Baker, near Woodberry, Baltimore County, Md	29	4	
29	Louis Gittermann, Mount Hope, Baltimore County, Md	14	4	
29	E. W. Patterson, M. D., Mount Hope, Baltimore County, Md.	16	4	
29	Philip Lantze, Mount Hope, Baltimore County, Md	7	2a.	
29	Insane Asylum, Mount Hope, Baltimore County, Md	54	Sus.	
30	Julius Arnt, near Arlington, Baltimore County, Md	3	.....	
30	Hamilton Stump, near Stephenson's Station, Baltimore County, Md.	6	.....	
30	Wm. Stump, near Stephenson's Station, Baltimore Co., Md.	8	.....	
30	Carroll Winchester, near Stephenson's Station, Baltimore County, Md.	14	.....	
31	Theo. Heinecke, near Govanstown, Baltimore County, Md	6	1c.	
31	Mr. Voncap, north of Govanstown, Baltimore County, Md	21	.....	

Inspections in the District of Columbia.

	Inspections by W. H. Rose, V. S.			
1885.				
Nov. 2	Robert Barrett, 7th street, N. W	10	.....	Poor.
2	Nicholas Beck, 9th street, near Grant avenue	4	.....	Do.
2	Mrs. Keefe, 9th street, near Grant avenue	7	.....	Do.
2	William C. McKay, 9th street, near Sherman avenue	18	.....	Animals, fair.
2	John Barry, 9th street, near Schutzen Park	7	.....	Animals, poor.

*Infected.

Inspections in District of Columbia—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by W. H. Rose, V. S.—Continued.			
1885.				
Nov. 3	Dennis Murphy, 9th street, near Grant avenue	9	4	Poor.
3	Thomas Dunnigan, 7th street, near Grant avenue	13	.....	Fair.
3	Mrs. Mary Morrissey, 7th street, near Boundary	16	1	Do.
3	Mr. Leo. Smeltzer, 9th street, near Sherman avenue	5	5	Stables, poor; animals, fair.
3	Mr. Shugrue, 9th street	26	.....	Poor.
3	Mr. Long, 9th street, near Grant avenue	1	.....	Do.
4	John Driscoll, Grant avenue, near 7th street	2	.....	Stables, poor; animals, fair.
4	Bridget Meyers, 7th street, near Grant avenue	5	.....	Stables, fair; animals, poor.
4	John Lynch, 7th street, near Grant avenue	5	.....	Stables, foul; animals, fair.
4	Bridget White, 7th street, near Grant avenue	10	.....	Poor.
4	James McCauly, 7th street, near Grant avenue	1	.....	Stables, clean; animals, fair.
4	Mrs. Donohue, Grant avenue, near 7th street	3	.....	Stables, foul; animals, poor.
4	Cornelius Shea, Whitney avenue, near 7th street	21	.....	Animals, fair.
4	Mr. Seidenberger, 7th street	12	.....	Animals, poor.
4	A. G. Mount, 7th street	37	.....	Stables, poor; animals, fair.
5	J. Buddington, Bladensburg road	1	1	Animals, poor.
5	Sprague Mansion, Glenwood road	1	.....	Fair.
5	Mrs. Roach, Glenwood road	16	.....	Stables, poor; animals, fair.
5	Michael Connors, Glenwood road	15	2c.	Fair.
5	Curtis I. Gilbert, Glenwood road	9	.....	Stables, poor; animals fair.
5	James Allman, Glenwood road	4	.....	Animals, fair.
5	Leo. Soloman, Glenwood road	9	.....	Do.
5	George Beale, Glenwood road	6	.....	Poor.
5	William Chord, Glenwood road	13	2	Do.
5	John Lacy, Glenwood road	12	.....	Stables, poor; animals, fair.
6	Deaf and Dumb Asylum	9	.....	Fair.
6	Mrs. Frances Carter, Glenwood road	1	1	Stables, foul; animals, fair.
6	Mrs. Burke, near Glenwood road	5	.....	Stables, poor; animals, fair.
6	John Merritt, near Glenwood road	2	2c.	Stables, foul; animals, fair.
6	Mr. Hartung, Prospect street	17	3	Stables, fair; animals, good.
6	Patrick Nelligan, Delaware avenue and Boundary, N. E	11	.....	Fair.
6	Mrs. Bridget Scanlon, Bladensburg road	4	.....	Stables, foul; animals, fair.
6	Mr. Cudmore, Caton avenue	9	.....	Stables, foul; animals, poor.
6	Mrs. McCarty, Caton avenue	2	.....	Fair.
6	Daniel Allman, Glenwood road	26	.....	Stables, fair; animals, poor.
6	Mrs. Flavin, Prospect street	2	1	Stables, poor; animals, fair.
7	Mr. Brahler, corner 3d and H streets, N. E	2	.....	Fair.
7	Mrs. Skelly, H street, N. E	1	.....	Do.
7	Mrs. H. Mahoney, 118 G street, N. E	2	.....	Poor.
7	James Lyons, 1st street, N. E	3	.....	Fair.
7	Michael Bernhardt, 5th street, N. E	4	3	Stables, foul; animals, starved.
7	Mr. Kirton, 3d street, N. E	4	.....	Poor.
7	Thomas Scanlon, 1032 5th street, N. E	2	.....	Stables, foul; animal, poor.
7	Mrs. Kain, 3d street, N. E	1	.....	Animals, fair.
7	Richard Reagan, M and 6th streets, N. E	4	.....	Stables, foul; animals, fair.
7	Thomas Donohue, I street, between 6th and 7th streets, N. E	7	3	Do.
7	Mrs. Conrad Steinagel, corner 5th and L streets, N. E	5	.....	Fair.
7	Mrs. Abert, 3d street, near Boundary, N. E	4	.....	Stables, foul; animals, fair.
7	Moses Stearman, near Harmonia Cemetery	7	.....	Fair.
7	Mr. Heightmiller, Bladensburg road	11	.....	Stables, poor; animals, fair.
7	Mrs. Connors, 29 P street	6	2	Stables, fair; animals, poor.
9	Mrs. Anna Harden, Mount Pleasant	6	.....	Poor.

Inspections in the District of Columbia—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by W. H. Rose, V. S.—Continued.			
1885.				
Nov. 9	Captain Newbold, Mount Pleasant	32	.....	Poor.
9	Daniel Sullivan, Mount Pleasant	3	.....	Stables, poor; animals, fair.
9	James Marr, Mount Pleasant	3	.....	Fair.
9	Mrs. Thomas Blagden, Mount Pleasant	19	4c.	Do.
9	Mrs. Elizabeth Casey, 1428 U street, N. W	10	.....	Poor.
9	Mrs. Rebecca Hamilton, Mount Pleasant	19	.....	Stables, clean; animals, fair.
10	Mrs. McNamee, P street, near Georgetown	2	.....	Poor.
10	Mr. Holman, near Georgetown	9	.....	Stables, poor; animals, fair.
10	Mr. Knott, near Georgetown	4	.....	Do.
10	John Murphy, Boundary, near 20th street	10	.....	Do.
10	James Mulligan, Boundary, near 20th street	12	1c.	
10	Mr. Tuttle, Boundary, near 20th street	3	.....	Fair.
10	Mr. Cook, 1732 19th street, N. W	2	.....	Poor.
10	Mrs. Lydon, 1724 19th street, N. W	2	.....	Stables, poor; animals, fair.
10	Martin Noon, 1712 19th street, N.W	1	.....	Poor.
10	James Rafferty, 1917 R street, N. W	2	.....	Stables, clean; animals, fair.
10	Mrs. Ryder, 20th street, between R and S	2	1c.	
10	John Seibel, 1916 S street, N. W	10	2c.	Fair.
10	Mrs. McDonald, 1920 S street, N.W	4	1c.	Stables, foul; animals, poor.
10	Mrs. McKeever, corner 19th and Boundary	3	.....	Stables, poor; animals, fair.
10	Mr. Deane, corner Columbia avenue and Boundary	3	.....	Fair.
10	Thomas Cullerton, Champaign avenue and Boundary	4	1c.	
10	Mrs. Mary Conners, Champaign avenue and Boundary	15	4c.	Stables, foul; animals, poor.
11	Mrs. Fitz, 23d street, near N street, N.W	2	.....	Poor.
11	Columbia Hospital, corner 25th and L streets	3	.....	Stables, fair; animals, poor.
11	Michael Keenan, 2119 11th street, N.W	2	1	Stables, poor; animals, fat.
11	Mrs. Bridget Murphy, 1945 12th N.W	5	.....	Fair.
11	Thomas Stepp, corner 23d and M streets, N.W	1	.....	Do.
11	Mrs. Donohue, alley between 24th and 25th street, N.W	2	1	
11	John Boyle, near Bladensburg road	20	.....	Poor.
11	Charles Hayhausen, near Bladensburg	8	.....	Fair.
11	Thomas Fenwick, near Mount Olivet Cemetery	8	.....	Do.
11	Dr. Palmer, near Bladensburg road	2	.....	Do.
11	Mr. Deselski, Bladensburg road	3	.....	Stables, poor; animals, fair.
11	National Hotel, Bladensburg road	6	.....	Fair.
11	Charles McCarty, Bladensburg road	5	1c.	Stables, poor; animals, fair.
11	Mrs. Mulcahey, Bladensburg road	6	.....	Do.
11	Thomas I. Samuels, Bladensburg road	4	.....	Stables, foul; animals, poor.
11	James Lewis, Bladensburg road	1	1c.	Stables, foul; animals, fair.
11	James Brown, Bladensburg road	8	.....	Stables, poor; animals, fair.
11	H. T. Hamilton 24th street, between M and N streets, N.W.	1	.....	Stables, poor; animals, fat.
11	James Noonan, hill, between 23d and 24th streets, N.W	2	1c.	
11	Mr. Holman, 23d street between M and N streets, N.W	1	.....	Stables, poor; animals, fair.
12	Charles King, corner Quarry and Columbia avenue, N.W	8	.....	Stables, poor; animals, poor.
	George Dorr, near Boundary	7	.....	Do.
12	Matthew Colbert, 419 2d street, S.W	3	.....	Do.
12	Thomas Maloney, 485 C street, S.W	3	.....	Do.
12	John Downey, Limerick ave., bet. D st. and Vermont ave	3	.....	Do.
12	Rachel Larrison, 106 Virginia avenue, S.W	2	.....	Do.
12	Mrs. Mary Maloney, 125 G street, S. W	2	.....	Stables, poor; animals, fair.
12	Mrs. Johannah Regan, 413 3½ street, S.W	2	.....	Do.
12	Michael Welsh, 343 G street, S.W	6	.....	Fair.
12	Morris Mangen, 704 G street, S.W	2	.....	Do.
12	Mrs. Driscoll, 347 H street, S.W	3	.....	Stables, fair; animals, poor.
12	Michael Dunnigan, 337 H street, S.W	5	.....	Poor.
12	William Collins, 610 H street, S. W	6	1c.	Do.

Inspections in the District of Columbia—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by W. H. Rose, V. S.—Continued.			
1885.				
Nov. 12	Mr. Curtain, 612 H street, S. W	2	.....	Fair.
12	Thomas Collins, 614 H street, S. W	6	.....	Stables, poor; animals, fair.
13	James Allman, corner C and 14th streets, S.W	10	.....	Fair.
13	Mrs. O'Leary, 1005 6th street, S.W	2	.....	Poor.
13	Mrs. Catharine Flynn, 1006 6th street, S.W	7	3c.	Do.
13	Joseph McCawley, corner 6th and M streets	2	.....	Fair.
13	Thomas Connors, 1216 Union street	10	.....	Poor.
13	Mrs. McNery, 574 L street, S.W	3	.....	Fair.
13	George Williams, 480 L street, S.W	3	.....	Do.
13	John Geyhardt, 330 K street, S. W	5	3c.	Stables, foul; animals, poor.
13	Christian Betz, 328 K street, S.W	1	.....	Stables, fair; animals, fat.
13	John Flaherty, 624 K street, S.W	2	1c.	Stables, foul; animals, fair.
13	Johannah Mahony, 628 K street, S. W	1	.....	Stables, foul; animals, fat.
13	Jeremiah Downey, 621 I street, S.W	6	1c.	Stables, fair; ani mals, poor.
14	Mrs. Mary Hogan, 1216 I street, S.W	4	.....	Poor.
14	United States navy-yard, foot of 8th street, S. E	3	.....	Fair.
14	Providence Hospital, corner 2d and D streets, S. E	2	.....	Stables, clean; animals, fair.
14	Michael Touhy, G street, between 4th and 5th streets, S. E	4	.....	Fair.
14	Pat. Hallahan, 746 6th street,	5	.....	Stables, foul; animals, fair.
14	John Sullivan, 311 Virginia avenue, S.W	4	.....	Stables, poor; animals, fair.
14	David Nagle, corner 2d and Vermont avenue	2	.....	Poor.
14	Eugene Sullivan, corner 2d and D streets, S.W	1	.....	Do.
14	R. J. Prather, 1112 K street, S.W	2	.....	Do.
14	L. M. Hummer, 1207 K street, S.W	2	.....	Do.
14	John Schwartz, corner 13th and L streets, S.W	4	.....	Stables, foul; animals, poor.
14	George B. Clark, corner 14th st. and Pennsylvania ave., S.W.	13	1c.	Poor.
14	Peter Miller, corner 14th and K streets, S.W	2	.....	Do.
14	Albert Dowdy, Pennsylvania ave., bet. 14th and 15th sts., S.W	19	.....	Stables, fair; animals, poor.
14	James Thomas, 1318 Georgia avenue, S. W	5	.....	Poor.
14	Christian Parks, 736 9th street, S.W	1	.....	Stables, fair; animals, poor.
16	Mrs. K. McLaughlin, 2118 G street, N.W	2	.....	Poor.
16	Mrs. Elizabeth Kendall, C st., bet. 20th and 21st sts., N.W	2	.....	Do.
16	John K. Pfeil, corner 22d and B streets, N.W	1	.....	Fair.
16	Mrs. Reilly, 22d street, between B and C streets, N.W	2	.....	Stables, foul; animals, fair.
16	Mrs. Lucas, corner B and 22d streets, N. W	1	.....	Poor.
16	John Fox, corner D and 23d street, N.W	2	.....	Stables, poor; animals, fair.
16	Mrs. Elizabeth Chism, 731 23d street, N.W	3	.....	Fair.
16	Saint Ann's Infant Asylum, corner 24th and K streets, N.W.	3	.....	Do.
16	Observatory, foot 23d street, N. W	3	.....	Do.
16	William McCullum, Hughes' alley	2	.....	Stables, foul; animals, fair.
16	William Henderson, 2407 I street, N.W	3	.....	Stables, poor; animals, very poor.
16	John Hughes, 924 27th street, N.W	3	.....	Stables, foul; animals, fair.
16	Washington Payton, New York avenue, near 21st street	1	.....	Poor.
16	Arthur Mason, 427 20th street, N.W	2	.....	Do.
16	Mrs. Townley, corner E and 21st street, N.W	1	.....	Fair.
17	Mrs. J. Manahan, 615 2d street, N. W	2	.....	Stables, poor; animals, fair.
17	John Burns, 25 Massachusetts avenue, N.W	12	.....	Do.
17	Michael O'Brien, 34 G street, N. W	1	.....	Do.
17	Dennis Fitzgerald, 18 G street, N.W	2	.....	Do.
17	Pat Collins, 41 Massachusetts avenue, N.W	1	.....	Do.
17	Morris Collins, 29 Massachusetts avenue, N.W	1	.....	Do.
17	Mrs. Driscoll, 31 F street, N.W	3	.....	Do.
17	Mrs. Foley, 29 F street, N.W	2	.....	Do.
17	Mrs. Ferdinand Borgia, 621 10th street, N. W	2	.....	Do.
17	Mrs. Openstein, corner 11th and D streets, N.W	4	2c.	Do.
17	Mr. Kallicher, D street, near 9th street, N.W	3	.....	Fair.
17	Mrs. Johannah Curtin, corner 9th and L streets, N.W	2	.....	Stables, poor; animals, fair.

Inspections in the District of Columbia—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by W. H. Rose, V. S.—Continued.			
1885.				
Nov. 17	Mrs. Bailor, 325 8th street, N.W	4	.....	Poor.
17	Dennis Harrison, 225 9th street, N.W	2	.....	Do.
17	William Tuft, 1003 North Carolina avenue, N.W	2	.....	Stables, clean; animals, fair.
17	Mrs. Flynn, 105 N street, N. E	...	.....	
17	Mrs. Flynn, 105 N street, S. E	4	.....	Stables, poor; animals, fair.
17	Allen & Webster, C street, between 11th and 12th, S. E	4	.....	Poor.
17	Edward Bresnahan, 817 C street, N. E	3	.....	Stables, poor; animals, fair.
17	Thomas Healey, 617 A street, N. E	2	.....	Fair.
17	Mr. Williamson, C street, between 11th and 12th, S. E	2	.....	Stables, clean; animals, fat.
17	Mrs. Miller, D street, near 13th, S. E	2	.....	Stables, fair; animals, good.
17	Mr. Schwartzman, D street, near 13th, S. E	3	.....	Poor.
17	William George, 619 B street, S. E	2	.....	Stables, poor; animals, fair.
17	Mrs. Clancy, 18 5th street, N. E	3	.....	Stables, foul; animals, poor.
17	Thomas Noone, 22 5th street, N. E	2	.....	Stables, poor; animals, fair.
17	Mrs. Catharine Lynch, 11 7th street, N. E	4	.....	Poor.
17	Bridget Reilly, 9th street, near B, N. E	4	.....	Stables, poor animals, fair.
18	Matthew Sexton, Jackson alley, N. E	5	.....	Do.
18	Mrs. Fedline, 7th street near Grant avenue	1	.....	Do.
18	Mrs. Jackson, 2219 7th street, N. W	2	.....	Poor.
18	Huriah Daly, near Le Droit Park, N. W	3	.....	Do.
18	Charles Banks, 314 Pomeroy street, N. W	2	.....	Do.
18	John Moore, Moore's Lane, N. W	2	.....	Fair.
18	William Addison, Pomeroy street, N. W	2	.....	Poor.
18	Mrs. Kate Lucus, Pomeroy street, N. W	4	.....	Stables, foul; animals, very poor.
18	Mrs. Michael Shea, Boundary, N. W	4	.....	Stables, poor; animals, fair.
18	Mr. Fred. Middledorf, Boundary, N. W	1	.....	Poor.
18	Gospel Temperance Hall, 203 I street, N. W	4	.....	Fair.
18	Mrs. C. Foley, 922 1st street, N. W	1	.....	Stables, foul; animals, fair.
18	Mrs. Mary Horan, 129 L street, N. W	3	.....	Stables, poor; animals, fair.
18	Mrs. Bresnahan, 105 L street, N. W	2	.....	Do.
18	James Dempsey, 1012 1st street, N. W	7	1c.	Do.
18	John Leppart, G street, between 6th and 7th, N. E	1	.....	Stables, foul; animals, fair.
18	Frank A. Godfrey, 724 7th street, N. E	3	1c.	
18	Mrs. Catherine Canty, 519 H street, N. E	2	.....	Fair.
18	Patrick Connell, 715 4th street, N. E	2	.....	Stables, foul; animals, poor.
18	Little Sisters of the Poor, H street, between 2d and 3d, N. E.	3	.....	Fair.
18	Miss Mary Green, 216 E street, N. E	2	.....	Stables, foul; animals, poor.
18	Thomas White, 405 2d street, N. E	1	.....	Stables, poor; animals, fair.
	Mrs. Mary Farrell, 200 G street, N. E	3	.....	Do.
18	Patrick Clancy, corner H and 1st streets, N. E	2	.....	Poor.
18	Mrs. H. Mahoney, 118 G street, N. E	1	....	Stables, poor animals, fair.
18	Henry Ready, 32 G street, N. E	3	.....	Do.
18	John Connell, Jackson alley, N. E	8	.....	Fair.
18	Mrs. A. Sheedy, Jackson alley, N. E	3	.....	Stables, foul; animals, poor.
18	Mrs. Mary Powell, Jackson alley, N. E	2	.....	Poor.
18	Mr. L. Cullinan, Jackson alley, N. E	4	.....	Do.
19	Mrs. W. Caton, Jackson alley, N. E	2	1c.	Do.
19	Mrs. Bennett, Benning's Road, N. E	2	.....	Fair.
19	Thomas Hanrahan, Benning's road, N. E	10	2c.	Stables, fair; animals, poor.
19	Mr. Mason, Benning's road, N. E	11	.....	Poor.
19	Mr. Foley, Benning's road, N. E	7	.....	Stables, poor; animals, fair.
19	Mr. Murphy, Benning's Road	9	1c.	Fair.
19	William Crawford, 16th street, near jail, N. E	12	2c.	Stables, fair; animals, poor.
19	Mrs. Johnnah Bensinger, A st., between 16th and 17th, N.E.	2	.....	Poor.

Inspections in the District of Columbia—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
1885.	*Inspections by W. H. Rose, V. S.*—Continued.			
Nov. 19	Richard Horan, A street, near District jail, N. E	4	.....	Stables, poor; animals, fair.
19	Mrs. Elizabeth Flynn, A st., between 14th and 15th, N. E	28	1c.	Stables, very poor; animals, poor.
19	Patrick Connors, corner 15th and D streets, N. E	12	.....	Fair.
19	Patrick Henry Henley, corner 14th and H streets, N. E	2	.....	Stables, poor; animals, fair.
19	William Phillips, 1323 I street, N. E	1	.....	Fair.
19	Mrs. Heiss, corner G and 13th streets, N. E	4	.....	Stables, poor; animals, fair.
19	Mrs. Wilson, 1237 F. street, N. E	3	.....	Do.
21	James Flaherty, 215 10th street, N. E	7	.....	Do.
21	Thomas McIntire, 1320 B street, N. E	3	.....	Stables, poor; animals, fair.
21	Mrs. Flanagan, Benning's road	10	2c.	Stables, poor; animals, very poor.
21	William Bradley, Benning's road	13	1c.	Stables, poor; animals, fair.
21	Academy of Visitation, Fayette street, Georgetown	13	.....	Stables, clean; animals, very good.
21	Jeremiah Collins, 1529 36th street, Georgetown	2	.....	Very poor.
21	Daniel O'Connor, 1415 36th street, Georgetown	4	.....	Stables, poor; animals, fair.
21	Mrs. Mahae, 3519 36th street, Georgetown	3	.....	Fair.
21	Benedict Johnson, 1423 37th street, Georgetown	4	.....	Foul.
21	Mrs. Donohue, 1425 37th street, Georgetown	2	1c.	Stables, poor; animals, fair.
21	Georgetown College, 37th street, Georgetown	11	.....	Stables, fair; animals, very good.
21	Patrick Connors, 3622 2d street, Georgetown	2	1c.	Stables, poor; animals, very poor.
21	Mrs. Hurley, 3619 2d street, Georgetown	2	.....	Fair.
21	John Harrigan, 3601 2d street, Georgetown	7	.....	Poor.
23	Soldier's Home	95	.....	Fair.
23	F. Rose, Soldier's Home road	2	.....	Poor.
23	Jacob Roberts, Soldiers' Home road	4	.....	Do.
23	James H. Hollidge, corner S. H. R., and Magnolia avenue	20	1c.	
23	John W. Brown, Soldiers' Home road	2	1a.	
24	Henry Smith, Conduit road, Georgetown	4	.....	Stables, poor; animals, fair.
24	Phillip May, Conduit road, Georgetown	6	.....	Poor.
24	Thomas Ready, Conduit road, Georgetown	26	Sus.	Fair.
24	Mrs. Hogan, near Georgetown College	1	.....	Poor.
24	Mrs. Brown, corner Canal and Conduit road	1	.....	Stables, poor; animals, fair.
24	Timothy O'Neal, near Conduit road	4	.....	Poor.
24	Thomas Sullivan, Conduit road	12	1c.	
24	John Ricks, Canal road	18	Sus.	Stables, poor; animals, fair.
24	William Fowler, near Georgetown College	3	.....	Poor.
24	William H. Allder, Conduit road	13	1c.	
25	J. Harrington, near Tenallytown	34	1a.	Fair.
25	Jacob Kendeler, near Conduit road	10	.....	Animals, fair.
25	Mrs. Charles Weaver, Chain Bridge road	12	.....	
25	Mr. Rosenbush, near Tenallytown	3	.....	Fair.
25	Mrs. Thomas Hume, Foxhall road	4	.....	Do.
25	Joel Wise, near Tenallytown	3	.....	Do.
25	Capt. W. A. Maddox, Foxhall road	12	.....	Do.
25	George B. Smith, Foxhall road	1	.....	Do.
25	Mrs Ford, Foxhall road	1	.....	Do.
25	Walter Brown, Foxhall road	4	.....	Do.
25	William Gleason, Foxhall road	2	.....	Do.
25	John Quinn, Foxhall road	2	.....	Stables, poor; animals, fair.
25	Feeny & Connelly, Tennallytown road	15	.....	Do.
25	Mrs. Annie Scion, 1667 32d street	2	.....	Poor.
25	Mrs. Breslahan, 1673 32d street	5	.....	Do.
25	John Callahan, corner Market and 32d streets, Georgetown	7	.....	Do.
27	Michael Shugrue, Conduit road	12	.....	Stables, fair; animals, poor.
27	Joseph Weaver, Conduit road	10	1c. 1a.	
27	Joseph Davis, west of Tenallytown	28	.....	Stables, fair; animals, poor.
27	L. P. Hazel, west of Tenallytown	3	.....	Do.

Inspections in the District of Columbia—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by W. H. Rose, V. S.—Continued.			
1885.				
Nov. 27	J. O. Donohue, west of Tenallytown	11	.....	Stables, poor; animals, fair.
27	Capt. William Thompson, Tenallytown	16	.....	Stables, fair; animals, good.
27	Mr. E. Andrews, Tenallytown	18	.....	Stables, fair; animals, poor.
27	Samuel Burrows, Tenallytown	20	.....	Stables, poor; animals, fair.
27	Fred. Bengerter, near Fort Reno	27	.....	Stables, poor; animals, very poor.
27	John Ambarger, Conduit road	2	1c.	Do.
27	Mr. Shary, Conduit road	2	.....	Do.
27	Mrs. McCarty, Conduit road	14	.....	Stables, poor; animals, fair.
27	James Shugrue, Conduit road	10	.....	Do.
28	Harper & Johnson, 7th street, above Brightwood	10	6c.	
28	Louis Stearman, Magnolia avenue	6	.....	Fair.
28	Bennett Hatcher, Magnolia avenue	5	.....	Do.
28	Mr. Ray, Magnolia avenue	6	.....	Do.
28	Mr. Lay, north of Brightwood	4	.....	Do.
28	Mr. Hughes, north of Boundary	2	.....	Do.
28	Charles King, north of Brightwood	11	.....	Do.
28	Landon & Green, north of Brightwood	13	.....	Do.
28	Mr. Lincoln, north of Brightwood	11	.....	Do.
28	Mr. Warner, north of Brightwood	2	.....	Do.
28	Mrs. E. Thomas, Brightwood	7	.....	Stables, poor; animals, very poor.
28	Mrs. Beele, Brightwood	2	.....	Stables, poor; animals, fair.
28	Mr. Carpenter, Brightwood	10	.....	Stables, fair; animals, very poor.
28	Mrs. Rhor, Brightwood	2	.....	Fair.
28	Mr. Moses, corner 7th street and Brightwood	2	.....	Stables, fair; animals, good.
28	Michael White, 7th street, near Brightwood	26	Sus.	Stables, poor; animals, very poor.
30	Wallace Payne, south of Anacostia	25	5c.	Do.
30	Frank Waller, south of Anacostia	49	.....	Fair.
30	James Hawley, south of Anacostia	3	.....	Do.
30	Samuel Smith, south of Anacostia	9	.....	Poor.
30	Joseph Waller, south of Anacostia	39	.....	Stables, poor; animals, fair.
30	Insane asylum, Nicholas Avenue	140	.....	Stables, clean; animals, fair.
30	C. A. Baker, Wheeler road	10	.....	Fair.
30	Jerry Dorsey, Stantontown	3	.....	Poor.
Dec. 2	Mr. Spear, Queenstown road	18	3c.	Stables, poor; animals, fair.
2	Mr. Cease, Bunker Hill	19	.....	Do.
2	John Lacy, Queen's Chapel	6	.....	Do.
2	Albert Wall, Queen's Chapel	19	.....	Poor.
2	Mr. Quackenbush, Old Bladensburg	20	.....	Stables, fair; animals, good.
2	Mr. Welsh, Old Bladensburg	2	.....	Stables, poor; animals, fair.
2	Mr. Carlton, near Bladensburg	20	3c.	Stables, clean; animals, fair.
2	Reform school, Bladensburg road	15	.....	Fair.
2	Mr. Lacy, Benning's	28	.....	Do.
3	Miss Jennie Guigon, Uniontown	3	.....	Do.
3	Mr. King, Uniontown	1	.....	Do.
3	Mrs. B. Downey, Uniontown	2	.....	Stables, poor; animals, fair.
3	John Lewis, Uniontown	3	.....	Fair.
3	Mr. Robey, Uniontown	1	.....	Do.
3	Thomas Anderson, Uniontown	1	.....	Do.
3	Mr. James Anderson, Uniontown	1	.....	Do.
3	German Orphan Asylum, Good Hope Hill	7	.....	Do.
3	Mr. Golden, Marlborough road	20	.....	Do.
3	Mr. Simpson, near Marlborough road	11	.....	Do.
3	William King, Uniontown	4	.....	Do.
3	Richard Grimes, Uniontown	2	.....	Stables, fair; animals, good.
3	William Fastnaught, Uniontown	10	.....	Stables, poor; animals, fair.
3	Dr. William Lee White, Uniontown	1	.....	Do.

Inspections in District of Columbia—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by W. H. Rose, V. S.—Continued.			
1885.				
Dec. 3	Mr. Thomas, Uniontown	1	.....	Fair.
3	Edmund McMann, Uniontown	3	.....	Do.
3	United States Arsenal, foot 4½ street, S. W	15	.....	Do.
3	Mrs. Long, foot 4½ street, S. W	2	.....	Stables, poor; animals, fair.
3	Mr. Spellman, 4½ street, S. W	2	.....	Do.
3	John Whittier, 4½ street, S. W	2	.....	Do.

Inspections in Virginia and West Virginia.

	Inspections by W. H. Rose, V. S.			
1885.				
Aug. 18	Timberlake & Maslin, Middletown, Frederick Co., Virginia	10	.....	
18	John H. Stickley, Middletown, Frederick County, Virginia	8	.....	
20	Edward Colston, Summit Point, Jefferson Co., West Virginia	25	.....	
20	Christopher Beck, Summit Pt., Jefferson Co., West Virginia	1	1	
20	W. M. Clements, Summit Point, Jefferson Co., West Virginia	36	.....	Animals, fair.
24	William Bates, Summit Point, Jefferson Co., West Virginia	8	1	
25	Thomas Locke, Summit Point, Jefferson Co., West Virginia	20	.....	
25	W. L. D. Lewis, Berryville, Clarke County, Virginia	36	.....	
26	Adam Young, Summit Point, Jefferson Co., West Virginia	16	.....	
26	Mr. Willis, Summit Point, Jefferson County, West Virginia	45	.....	
26	Mr. Haines, Summit Point, Jefferson County, West Virginia	34	.....	
Dec. 4	Townsend Baggott, cor. Peyton st. and River Turnpike, Alexandria, Va.	12	.....	Poor.
4	Miles Murphy, corner Prince and West streets, Virginia	7	1c.	Do.
4	James Houlson, Payne street, Alexandria, Va	5	.....	Stables, poor; animals, fair.
4	Christopher Lyle, 300 Prince street, Alexandria, Va	3	.....	Do.
4	James Roberts, near River turnpike, Virginia	62	Sus.	Stables, clean; animals, fair.
4	Albert Studd, River turnpike, Virginia	18	1 sus.	Stables, poor; animals, fair.
4	James Studd, River turnpike, Virginia	23	1 sus.	Fair.
4	James Elliot, River turnpike, Virginia	11	.....	Do.
5	Richard S. Windsor, Windsor road, Virginia	31	.....	Stables, fair; animals, good.
5	Thomas Walsh, Windsor road, Virginia	28	Sus.	Stables, fair; animals, fair.
5	General Fitz-Hugh Lee, Windsor road, Virginia	36	3c.	Fair.
5	Major Johnson, Mount Vernon road, Virginia	87	.....	Stables, clean; animals, fair.
5	Johnson Downey, near Hunting Creek, Virginia	26	.....	Stables, very poor; animals, fair.
7	J. Norman Gibbs, near Mount Vernon, Fairfax Co., Virginia	83	1c.	Fair.
7	Mrs. Chris. Ballinger, near Mt. Vernon, Fairfax Co., Virginia	49	.....	Do.
7	Mrs. Jane Thompson, Mt. Vernon road, Fairfax Co., Virginia	60	Sus.	
7	Courtland Lukins, near Mt. Vernon, Fairfax Co., Virginia	31	.....	Fair.
8	James McWilliams, 2½ miles s. Alexandria, Fairfax Co., Va	40	1 sus.	Stables, poor; animals, fair.
8	James Gains, 2½ miles southwest Alexandria, Fairfax Co., Va	24	.....	Fair.
8	Albert Harrison, 2½ miles s. w. Alexandria, Va	37	.....	Stables, foul; animals, fair.
8	John Harrison, 3 miles s. w. Alexandria, Fairfax Co., Va	19	.....	Fair.
8	Mrs. C. Spillman, Pitt street, Alexandria, Va	4	.....	Stables, poor; animals, fair.
8	Mrs. Edward Lawler, 88 Wilke st., Alexandria, Va	6	.....	Fair.
8	Lelwood Darling, St. Asaph, Alexandria, Va	16	3c.	Poor.
8	Owen Carroll, cor. College and Wolf sts., Alexandria, Va	11	.....	Stables, foul; animals, poor.
9	Mr. Sarah Stonell, cor. Gibson and Fairfax sts., Alexandria, Va	3	1c.	Stables, new; animals, fair.
9	James Beach, Gibson street, Alexandria, Va	3	.....	Stables, poor; animals, fair.
9	Mrs. Deane, Gibson street, Alexandria, Va	2	.....	Fair.
9	Mrs. McCarty, cor. Gibson and Lee sts., Alexandria, Va	3	.....	Do.
9	Mr. McLaughlin, Arlington, Alexandria, Va	50	3c.	Poor.
9	W. B. Graves, Alexandria, Alexandria, Va	8	.....	Fair.
9	Baker Thorn, Arlington, Alexandria, Va	2	.....	Stables, poor; animals, fair.

Inspection in Kentucky.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by W. H. Wray, V. S.			
1885.				
Aug. 5	J. S. Withers, Cynthiana, Harrison County	2	2	
5	Marion Rue, Cynthiana, Harrison County	1	.....	
5	J. D. Feeback, Cynthiana, Harrison County	1	.....	
5	J. W. Lane, Cynthiana, Harrison County	1	.....	
5	P. Barhart, Cynthiana, Harrison County	1	.....	
5	I. N. Slade, Cynthiana, Harrison County	1	.....	
5	O. Slade, Cynthiana, Harrison County	1	1	
5	A. Perrin, Cynthiana, Harrison County	1	.....	
5	George Edsall, Cynthiana, Harrison County	2	.....	
5	James T. Hodges, Cynthiana, Harrison County	1	.....	
5	Mont. Bridwell, Cynthiana, Harrison County	3	1	
6	A. F. Fitzwater, Cynthiana, Harrison County	1	1	
7	J. Kaufman, Cynthiana, Harrison County	2	.....	
7	Frisbie & Lake, Cynthiana, Harrison County	17	1	
8	Mrs. Kincant, Cynthiana, Harrison County	1	.....	
8	J. T. Martin, Cynthiana, Harrison County	1	.....	
8	P. Byers, Cynthiana, Harrison County	3	.....	
8	William Slade, Cynthiana, Harrison County	1	.....	
8	J. B. Stevens, Cynthiana, Harrison County	1	.....	
8	Dr. Hedge, Cynthiana, Harrison County	1	.....	
8	John Crouin, Cynthiana, Harrison County	2	1	
8	M. Whittaker, Cynthiana, Harrison County	1	.....	
8	Mrs. Grater, Cynthiana, Harrison County	1	.....	
8	T. G. Megibben, Cynthiana, Harrison County	5	.....	
8	Jos. Woolwinder, Cynthiana, Harrison County	1	.....	
8	Mrs. Roberts, Cynthiana, Harrison County	1	.....	
8	William T. Handy, Cynthiana, Harrison County	19	.....	
8	A. Stuart, Cynthiana, Harrison County	1	.....	
8	Jos. Taylor, Cynthiana, Harrison County	1	.....	
8	A. F. Fitzwater, Cynthiana, Harrison County	1	.....	
8	William Walls, Cynthiana, Harrison County	1	.....	
8	J. Riche, Cynthiana, Harrison County	1	.....	
8	Dr. Snizer, Cynthiana, Harrison County	1	.....	
8	A. Leidig, Cynthiana, Harrison County	1	.....	
8	James Brenan, Cynthiana, Harrison County	1	.....	
8	R. H. Polmeyer, Cynthiana, Harrison County	1	.....	
8	J. Doyle, Cynthiana, Harrison County	1	.....	
8	T. Robinson, Cynthiana, Harrison County	1	.....	
8	Mrs. Shea, Cynthiana, Harrison County	3	.....	
10	Charles Tebb, Cynthiana, Harrison County	17	.....	Fair.
10	Jos. Craig, Cynthiana, Harrison County	32	.....	Do.
11	Frisbie & Lake, Cynthiana, Harrison County	41	.....	
12	W. B. Smith, Cynthiana, Harrison County	4	.....	
12	F. Baird, Cynthiana, Harrison County	4	.....	
12	H. Williams, Cynthiana, Harrison County	8	.....	Stables, excellent; animals, good.
12	C. R. Kimbrough, Cynthiana, Harrison County	1	.....	Good.
13	William Bowers, Cynthiana, Harrison County	1	.....	
13	Jos. Stevens, Cynthiana, Harrison County	1	1	
13	Frisbie & Lake, Cynthiana, Harrison County	26	15	
17	J. F. Moffitt, Cynthiana, Harrison County	1	.....	
17	Samuel Williams, Cynthiana, Harrison County	1	.....	
17	William Hovine, Cynthiana, Harrison County	1	.....	
17	R. N. Colyer, Cynthiana, Harrison County	3	.....	
17	N. F. Smith, Cynthiana, Harrison County	2	.....	
17	C. Willson, Cynthiana, Harrison County	1	.....	
17	N. W. Frazier, Cynthiana, Harrison County	3	.....	
18	T. J. Moffitt, Cynthiana, Harrison County	55	.....	
18	William Parrish, Cynthiana, Harrison County	1	.....	
18	William Krebals, Cynthiana, Harrison County	3	.....	
18	J. S. Boyd, Cynthiana, Harrison County	1	.....	
19	J. W. Musselman, Cynthiana, Harrison County	1	.....	
20	William Adams, Cynthiana, Harrison County	1	.....	
20	B. T. Riggs, Cynthiana, Harrison County	1	.....	
20	T. Rankin, Cynthiana, Harrison County	1	.....	
20	J. Wolfert, Cynthiana, Harrison County	1	.....	
20	Thomas Hinkson, Cynthiana, Harrison County	1	.....	
20	Thomas Jefferson, Cynthiana, Harrison County	2	.....	
21	J. S. Body, Cynthiana, Harrison County	20	.....	
21	Chs. Lail, Cynthiana, Harrison County	1	.....	
21	Mr. Light Brun, Cynthiana, Harrison County	14	.....	
22	F. J. Moffitt, Cynthiana, Harrison County	1	1	
22	J. W. Moore, Cynthiana, Harrison County	32	.....	
22	James Dunn, Cynthiana, Harrison County	2	.....	
22	L. Lebus, Cynthiana, Harrison County	21	.....	
22	J. Norris, Cynthiana, Harrison County	2	.....	

Inspections in Kentucky—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by W. H. Wray, V. S.—Continued.			
1885.				
Aug. 24	F. Ashbrook, Cynthiana, Harrison County	20	.....	
24	John Brenan, Cynthiana, Harrison County	18	.....	
26	F. J. Megibben, Cynthiana, Harrison County	5	.....	
26	D. Mulcahy, Cynthiana, Harrison County	14	.....	
26	M. J. Current, Cynthiana, Harrison County	18	.....	
27	Nat. Smith, Cynthiana, Harrison County	21	.....	
27	J. R. Peck, Cynthiana, Harrison County	1	.....	
28	William T. Handy, Cynthiana, Harrison County	19	13	
28	Mrs. Roberts, Cynthiana, Harrison County	1	1	
28	Jos. Woolwinder, Cynthiana, Harrison County	1	.....	
29	Frisbie & Lake, Cynthiana, Harrison County	....	2	
Sept. 1	John White, Cynthiana, Harrison County	4	.....	
1	H. S. Morland, Cynthiana, Harrison County	1	1	
2	Frisbie & Lake, Cynthiana, Harrison County	41	6	
4	William Haviland, Cynthiana, Harrison County	5	.....	
4	J. W. Musselman, Lairs' Station, Harrison County	29	.....	
7	M. Current, Indian Creek, Harrison County	7	.....	
8	David F. Brannock, Richland Creek, Harrison County	17	.....	
9	Estate of General Desha, Cynthiana, Harrison County	107	.....	
14	D. F. Brannock, Richland Creek, Harrison County	17	3	
14	John Stevens, Cynthiana, Harrison County	1	.....	
16	Jos. McClintock, Cynthiana, Harrison County	4	.....	
16	Captain Desha, Cynthiana, Harrison County	22	.....	
17	John Ryan, Lexington, Clark County	52	....	
18	David Burke, Cynthiana, Harrison County	17	.....	
18	Professor Lockhart, Cynthiana, Harrison County	1	.....	
18	John Ward, Cynthiana, Harrison County	1	.....	
22	Mrs. Calhoun, near Cynthiana, Harrison County	26	.....	
22	Nat. Lydick, near Cynthiana, Harrison County	22	.....	
23	Frank Parks, near Cynthiana, Harrison County	8	.....	
25	Dr. Kellar, Ruddle's Mills, Harrison County	1	.....	
26	Jos. B. McClintock, near Paris, Bourbon County	21	.....	
26	E. R. Van Hook, near Paris, Bourbon County	18	.....	
29	John B. Lair, Lair's Station, Harrison County	56	.....	
30	H. Webster, Cynthiana, Harrison County	16	.....	
Oct. 1	N. W. Frazier, near Cynthiana, Harrison County	55	.....	
3	M. Ford, near Paris, Bourbon County	14	.....	
5	Mrs. S. D. Talbot, near Paris, Bourbon County	25	.....	
5	T. H. Clay, near Paris, Bourbon County	21	.....	
7	Frisbie & Lake, Cynthiana, Harrison County	43	7	
7	....do	27	16	
8	J. S. Withers, Cynthiana, Harrison County	2	1	
9	Frisbie & Lake, Cynthiana, Harrison County	18	1	
10	A. Perrin, Cynthiana, Harrison County	1	.....	
12	M. Bridwell, Cynthiana, Harrison County	4	1	
16	A. W. Lydick, Cynthiana, Harrison County	1	.....	
16	F. Grater, Cynthiana, Harrison County	1	.....	
16	William E. Slade, Cynthiana, Harrison County	1	.....	
16	T. J. Megibben, Cynthiana, Harrison County	3	1	
16	James Brenan, Cynthiana, Harrison County	1	.....	
16	Dennis Shea, Cynthiana, Harrison County	3	.....	
16	A. F. Fitzwater, Cynthiana, Harrison County	1	.....	
16	Mr. MacWhittaker, Cynthiana, Harrison County	1	.....	
16	Mrs. Stewart, Cynthiana, Harrison County	1	.....	
16	Mr. Wall, Cynthiana, Harrison County	1	.....	
16	T. Robertson, Cynthiana, Harrison County	1	.....	
20	Marion Rule, Cynthiana, Harrison County	1	.....	
23	J. Levi Patterson, Cynthiana, Harrison County	19	.....	Excellent.
23	Noah S. Patterson, Lexington Pike, Harrison County	24	.....	Stables, good; animals, excellent.
24	James Patterson, Jacksonville, Bourbon County	56	.....	Do.
27	John D. Feeback, Cynthiana, Harrison County	1	1	
27	Irving Cox, Indian Creek, Harrison County	13	2	Dangerous.
30	Franks Parks, Connorville, Harrison County	50	.....	Stables, none; animals, excellent.
31	D. A. Givens, Cynthiana, Harrison County	50	.....	Excellent.
31	John M. Berry, Berry, Harrison County	50	.....	Stables, good; animals, excellent.
Nov. 3	James Lail, Lail's Station, Harrison County	1	.....	Good.
5	C. R. Kimbrough, Cynthiana, Harrison County	1	.....	Do.
5	William Adams, Cynthiana, Harrison County	1	.....	Do.
6	Dr. Hedges, Cynthiana, Harrison County	1	.....	Do.
7	J. K. Lake's home place, Cynthiana, Harrison County	14	1	Animals, good.
7	N. Henry, near Cynthiana, Harrison County	3	.....	Good.
8	R. M. Wall, Cynthiana, Harrison County	1	.....	Animals, good.
9	J. S. Withers, Cynthiana, Harrison County	1	1	Good.

Inspections in Kentucky—Continued.

Day of month.	Name of owner or person in charge and location of stable.	No. of cattle.	No. with lung-plague.	Condition.
	Inspections by W. H. Wray, V. S.—Continued.			
1885.				
Nov. 9	R. M. Collier, Cynthiana, Harrison County	2	1	Good.
10	J. Cronin, Cynthiana, Harrison County	2	.....	Do.
10	Mrs. D. Shea, Cynthiana, Harrison County	3	.....	
10	T. J. Megibben, Cynthiana, Harrison County	3	.....	Do.
10	Martin Bridwell, Cynthiana, Harrison County	3	.....	Do.
10	A. Perrin, Cynthiana, Harrison County	1	.....	Do.
11	William T. Handy, Cynthiana, Harrison County	15	7	Do.
11	A. W. Lydick, Cynthiana, Harrison County	1	.....	Animals, good.
11	Mr. Wall, Cynthiana, Harrison County	....	.....	Do.
11	Mrs. Stewart, Cynthiana, Harrison County	2	.....	Do.
11	Mr. McWhittaker, Cynthiana, Harrison County	1	.....	Do.
11	A. T. Fitzwater, Cynthiana, Harrison County	1	.....	Do.
11	D. Shea, Cynthiana, Harrison County	3	.....	Do.
11	James Brennan, Cynthiana, Harrison County	1	.....	Do.
11	J. T. Martin, Cynthiana, Harrison County	1	.....	Do.
11	T. J. Megibben, Cynthiana, Harrison County	3	.....	Do.
11	W. E. Slade, Cynthiana, Harrison County	1	.....	Do.
11	J. Cronin, Cynthiana, Harrison County	2	.....	Do.
11	James Taylor, Cynthiana, Harrison County	1	.....	Do.
12	F. Grater, Cynthiana, Harrison County	1	.....	Do.
12	Mrs. Kincant, Cynthiana, Harrison County	1	.....	Do.
12	James Doyle, Cynthiana, Harrison County	1	.....	Do.
13	Mrs. Calhoun, Cynthiana, Harrison County	26	.....	Do.
16	J. S. Withers, Cynthiana, Harrison County	1	1a.	Do.
17	William T. Handy, Cynthiana, Harrison County	21	13c.	Do.

INDEX.

Page.

Alabama, beef production 343
cattle trade of 336
dairying 342
diseases 347
grazing lands 337
Animal industry law, amendments to 156
power of Congress 157
Appendix, investigation of pleuro-pneumonia 553
Arkansas, southern cattle fever in 247
Australia, inoculation of pleuro-pneumonia in 138
Austria-Hungary, indemnity for slaughtered animals in 154
Austria, inoculation of pleuro-pneumonia in 133
Bacillus luteus (*suis*), a microbe found in swine-plague 229
description of 231
Bacterium of swine-plague, cultivation of 213
description of 212
effect on fowls 204, 206
on guinea-pigs 203
on mice 199, 200, 204, 210
on pigeons 201, 204, 205
on pigs 198, 201, 205, 221
on rabbits 200
killed by heat 215
not easily found in chronic cases 211
obtained from spleen and blood 248
Baden, inoculation of pleuro-pneumonia in 134
Beef production in Alabama 343
Georgia 354
Illinois 368
Belgium, indemnity for slaughtered animals in 154
inoculation of pleuro-pneumonia in 126
Bradley, J. N., swine and fowl industry of Missouri 418
cattle interests west of the Mississippi 424
Cattle companies 324
extent of trade in 173
with Great Britain 177
foreign importations of 313
interests west of the Mississippi 424, 429
trade and dairy interests of Alabama, Georgia, Illinois, Indiana, Ohio. 335
transportation from Texas to northern ranges 301
Cell for the cultivation of bacteria 242
Colorado, laws for control of contagious animal diseases 471
live-stock industry of 326
Southern cattle fever in 269, 327

Page.
Commerce as affected by contagious animal diseases 159
its relation to contagious diseases 174
Correspondence concerning pleuro-pneumonia in Kentucky 11, 33
Tennessee 24
Correspondents, items of interest from 461
Connecticut, laws for control of contagious animal diseases 475
Contagious animal diseases on Hawaiian Islands, laws concerning 469
laws of States and Territories 471
and methods for their limitation 446
act in Great Britain 467
authority needed to extirpate 149
eminent domain 171
extirpation of, powers of Congress 166
for the regulation of commerce 159
State police powers 170
indemnity for slaughtered animals 150
power to condemn, slaughter, appraise 150
enforce quarantine regulations 150
make inspections 149
relation to commerce 174
diseases, rules and regulations for 59
stockmen's resolutions in regard to 179
Culture-cell for studying bacteria 242
Cunningham, S. P., report on Southern cattle fever in Texas 270
Dairying in Alabama 342
Georgia 353
Illinois 384
Indiana 396
Ohio 417
Dakota, laws for control of contagious animal diseases 475
Delaware, laws for control of contagious animal diseases 477
inspections of stables in 644
pleuro-pneumonia in 89
Department of Agriculture and United States rules for co-operation 39
Description of plates illustrative of swine-plague 245, 246
Diseases of animals in Alabama 347
Georgia 361
Illinois 387
Ohio 417
District of Columbia, inspection of stables, &c., for pleuro-pneumonia 644
Dressed beef 316
Earth-worms producing gape disease in fowls 276
Eminent domain, appropriation of animals under 171
England, indemnity for slaughtered cattle in 153
Europe, indemnity for slaughtered cattle in 152
Foot-rot in sheep, protection against in Michigan 505
Fowl-cholera in Missouri, losses 421
Fowls, gape disease of 274
Dr. Walker's experiments 275
Fowl industry in Missouri 420
Fowls not susceptible to swine-plague 204, 206
France, inoculation of pleuro-pneumonia in 134
tables of 136
indemnity for slaughtered cattle in 152

Page.
Gap disease of fowls 274
Georgia, dairying in 353
diseases in 361
forage in 355
live stock of 347
markets in 360
Germany, indemnity for slaughtered animals in 154
Gerth, Dr., investigation of swine-plague in Nebraska 444
Grading up herds 296
Great Britain, strict enforcement of contagious diseases of animals act 467
Guinea-pigs susceptible to swine-plague 203
Hawaiian Islands, laws for the control of contagious animal diseases 469
Holland, indemnity for slaughtered animals in 155
inoculation of pleuro-pneumonia in 122
Hog-cholera. (*See* Swine-plague.)
Hogs. (*See* Swine.)
Hunt, Dr. E. M., contagious animal diseases, &c 446
Idaho, laws for control of contagious animal diseases 479
Illinois, an act to prevent pleuro-pneumonia in 482
beef production of 368
cattle supply of 366
climatic conditions 362
dairying in 384
diseases in 387
laws for control of contagious animal diseases 280
markets in 376
pleuro-pneumonia in 87
quarantine proclamation 543
Indiana, legislation concerning contagious animal diseases 485
live-stock supply 339
quarantine proclamation 545
Indemnity for slaughtered animals 150, 155
amount of 152
in Europe 152
Indian Territory, Southern cattle fever in 249
Inoculation against pleuro-pneumonia 92
history of, in Australia 101
practical results of, in Australia 138
of pleuro-pneumonia, practical results of, in Austria 133
in Baden 134
in Belgium 126
history of Belgian commission conclusions 98, 100
of pleuro-pneumonia does not always protect 116
effects of 102
effect of a second 108
experiments to show immunity conferred by 112
practical results of, in France 134
history of French commission experiments 98
general summary 142
history of 97
practical results of, in Holland 122
immunity not produced immediately 114
immunity conferred by 104, 110
introducing the disease into herds 120

	Page.
Inoculation, practical results in Kingdom of Saxony	129
method of	101
practical results of	122
proportion of cattle which resist	106
of pleuro-pneumonia, practical results of, in Prussia	130
history of Dr. Reviglio's conclusions	100
Professor Simonds's conclusions	99
practical results of, in the United States	142
utility of	144, 146
tumor, pathological anatomy of	104
Inspections concerning pleuro-pneumonia, summary of (*see also*, Pleuro-pneumonia)	92
Inter-State commerce, its relation to contagious diseases	162, 174
powers of Congress	166
Iowa, legislation concerning contagious animal diseases	486
Kansas, legislation concerning contagious animal diseases	488
for the protection of domestic animals	488
quarantine proclamation	546
relating to Texas cattle	492
Kentucky, pleuro-pneumonia in	9, 33
legislation concerning contagious animal diseases	494
inspection of stables, &c	652
Laws of States and Territories for the control of contagious animal diseases	471
Letter of transmittal	5
Live-stock associations	322
dues	323
industry of Colorado and Northwest	326
west of the Mississippi	429
interests, magnitude of	173, 174
papers	322
Long Island, inspection of stables, &c., for pleuro-pneumonia	584
Lung-worm disease. (*See* Verminous bronchitis.)	
Maine, legislation concerning contagious animal diseases	496
Maryland, legislation concerning contagious animal diseases	498
pleuro-pneumonia in	91
inspection of stables, &c	644
Massachusetts, legislation concerning contagious animal diseases	499
Mice, susceptible to swine-plague	199, 200, 204, 210
Michigan, legislation concerning contagious animal diseases	502
Minnesota, legislation concerning contagious animal diseases	506
Missouri, pleuro-pneumonia in	42
Southern cattle fever in	269, 461
swine and fowl industry of	418
Texas fever	423
Montana, legislation concerning contagious animal diseases	508, 509
quarantine proclamation	548
National quarantine grounds	312
Neat-cattle, quarantine regulations of	451
Nebraska, legislation concerning contagious animal diseases	511
quarantine proclamation	548
swine-plague in	434
Netherlands, extirpation of pleuro-pneumonia in	466
New Hampshire, laws relating to contagious animal diseases	516
New Jersey, laws relating to contagious animal diseases	516

Page.
New Jersey, inspection of stables, &c., for pleuro-pneumonia 585
pleuro-pneumonia in 91, 446
New Mexico, an act relating to contagious animal diseases 522
New York, act in relation to contagious animal diseases 520
inspection of stables, &c., for pleuro-pneumonia 553
North Carolina, legislation relating to contagious animal diseases 523
Northern trail 297
Ohio, beef production in 412
cattle supply of 406
concerning pleuro-pneumonia in 87
dairying in 410
diseases in 417
legislation relating to contagious animal diseases 523
quarantine proclamation 549
Pasteur's vaccine for *rouget* (*see also* Vaccine) 187
Parasites which produce lung-worm disease 281
Perry, E. W., live-stock industry of Alabama, Georgia, Illinois, Indiana, Ohio. 335
Pennsylvania, legislation concerning pleuro-pneumonia 524
pleuro-pneumonia in 91
Pigeons slightly susceptible to swine-plague 200, 204, 205
Pipette for collecting pathological exudates 240
Plates illustrative of swine-plague, description 245, 246
verminous bronchitis, description 289
Pleuro-pneumonia 303
animals that have a second attack of 107
in Delaware 89, 644
in District of Columbia 644
extirpation of 146, 147, 148
in Illinois 87
an act to prevent 482
inoculation practiced 92
inoculation of. (*See* Inoculation.)
inoculation as a means of suppressing 122
indemnity for slaughtered animals. (*See* Indemnity.)
inspections in various States 553
introduced by inoculation 120
in Kentucky 9, 33, 652
on Long Island 584
in Maryland 91, 644
measures for the extirpation of 95
medical treatment for 96
in Missouri 42
in Netherlands, extirpation of 466
in New Jersey 91, 446, 585
in New York 553
in New Zealand, suppression of 462
in Ohio 87
in Pennsylvania 91
in Pennsylvania, an act relating to 524
proportion of cattle which resist exposure to 105
quarantine at State lines 146
quarantine regulations 314
summary of inspections 92
summary as to its prevalence 93

	Page.
Pleuro-pneumonia in Tennessee	24
an act relating to	526
in Texas	26
in Virginia	89, 651
in West Virginia	89, 651
Pseudalius ovis pulmonalis	282
Prussia, innoculation of pleuro-pneumonia in	130
Public domain, leasing of	315
Quarantine proclamations in Illinois	543
in Indiana	545
in Kansas	546
in Montana	548
in Nebraska	548
in Ohio	549
in Wyoming	550
regulations of neat-cattle	451
power to enforce	150
at State lines	146
table of cattle imported	290
Rabbit susceptible to swine-plague	200
Ranchmen and farmers	321
Range industry, importance of	293
tenure	316
Resolutions of stockmen in regard to animal diseases	179
Rhode Island, law relating to contagious animal diseases	525
Rouget, post mortem appearances in	226
bacilli of. (*See* Vaccine.)	
Pasteur's vaccine for (*see* Swine-plague)	187
and swine-plague, foreign investigations in	224
Roumania, indemnity for slaughtered animals in	155
Rules and regulations for the suppression of contagious diseases	59
Salmon, D. E., on contagious pleuro-pneumonia	9
on gapes in fowls	274
on neat-cattle quarantine	290
on Southern cattle fever	247
on swine-plague	184
on verminous bronchitis	278
Saxony, Kingdom of, inoculation of pleuro-pneumonia in	129
Slaughter of diseased animals a matter of disinfection	57
Slaughter-houses, inspections of, in New York	567
Southern cattle fever	305, 327
in Arkansas	247
cause of	309
in Colorado	269
Colonel Cunningham's report on	270
how communicated	310
in Indian Territory	249
in Missouri	269, 461
permanently infected districts, how established	249
in Texas	249
in Wyoming	269
Spleen in swine-plague, how to obtain cultures from	243
Splenic fever. (*See* Southern cattle fever.)	
resolutions in regard to	182

Page.
Standart, S. H., on live-stock industry of Colorado 326
State police powers 170
Stockmen's resolutions in regard to diseases of animals 179
Strongylus filaria 281
micrurus 281
paradoxus 281
Sweden, indemnity for slaughtered animals in 155
Swine, tobacco for internal parasites in 463
and fowl industry of Missouri 418
plague, caused by a bacterium. (*See* Bacterium.)
how to obtain cultures from the spleen and blood in 243
investigations in 1884 ..... 184, 194
general résumé 217
plague, latest investigations in 219
in Missouri, losses 418
in Nebraska 434
as observed in swine 221
other microbes found in 229, 239
plates illustrating 245, 246
in pigs, produced by inoculation of pure cultures 198, 201, 205
feeding pure cultures 207
post mortem appearances in 222
produced by feeding portions of diseased pigs 199, 206, 207
and *rouget* compared 194, 211
foreign investigations in 224
in the United States, conclusions concerning 229
and typhoid fever of man compared 224
Syngamus trachealis. (*See* Gape disease.)
Table of animals exposed to pleuro-pneumonia 105
contracting pleuro-pneumonia after inoculation 116
cattle trade at the principal United States markets 177
cattle at the United States neat-cattle quarantine 290
by counties of assessed cattle in Texas 274
of inoculations of pleuro-pneumonia 142, 143
of temperature of vaccinated pigs 192
of Texas cattle drive 300
Taylor, H. M., on the importance of the range industry 293
Tennessee, law relating to pleuro-pneumonia in 526
pleuro-pneumonia in 24
Territories of northwest, live-stock industry of 326
Texas, assessed cattle in 274
Cunningham, S. P., report of 270
cattle fever in 249
cattle drive, table of 300
fever. (*See* Southern cattle fever.)
herds, blockade of 318
investigation concerning pleuro-pneumonia in 26
transportation of cattle to northern ranges 301
Tobacco for internal parasites in swine 463
Tracheal injections in verminous bronchitis 284
Trumbower, Dr., report on pleuro-pneumonia in Missouri 70
Typhoid fever and swine-plague compared 224
United States neat-cattle quarantine, tables of imported cattle 290

	Page.
United States neat-cattle, inoculation of pleuro-pneumonia in	142
why not to be allowed	144
Vaccine for *rouget*, inoculations with	188
microscopic examination of	187
mice inoculated with	188, 190
pigs inoculated with	189, 191
Virginia, laws relating to contagious animal diseases	530
pleuro-pneumonia in	89, 651
Verminous bronchitis in calves and lambs	278
diagnosis	279
post mortem appearance	279
symptoms	278
treatment	283
Vermont, laws relating to contagious animal diseases	529
Washington Territory, laws relating to contagious animal diseases	535
West Virginia, legislation concerning contagious animal diseases	536
pleuro-pneumonia in	89, 651
Willems' conclusions concerning inoculations for pleuro-pneumonia	97
Wilson, L., live-stock industry west of the Mississippi	429
Wisconsin, an act to suppress contagious animal diseases	540
Wyoming Territory, laws relating to contagious animal diseases	557
quarantine proclamations	550
Southern cattle-fever in	269

O